NOVEMBER, 1946

AIR CONDITIONING EQUIPMENT

MERCHANDISING MAINTENANCE



Practical Accounting Shows Profits for Contractors N THIS ISSUE: Service While You Wait ... New Soda Fountain Equipment Self-Powered Freezing Plant Comfort Cooling Data

LABORATORY

Prospecting for Perfection

ONCE upon a time the engineering operations of small parts manufacturers was relatively unimportant. But with the advent of today's high speeds, greater pressures and overall power increase, the proper designing, testing and engineering of small parts is a very important operation.

Here at Weatherhead we maintain the largest staff of engineering personnel of any firm in our industry. Our 125 "prospectors for perfection" are involved in a ceaseless research program of creating, trying and testing all our products. Three typical examples of our intensive research are as follows:

- 1. Hot salt is sprayed on tube fittings to test their finish so that they will stand up under any corrosive substances.
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This is all part of Weatherhead's continuing program of "prospecting for perfection". These attributes are not always visible in the products you buy but when you see the familiar Weatherhead trade mark, that is your guarantee that the product so identified is the most highly developed, tested and engineered of its kind. Why accept less?



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The complete bistory of Weatherhead's development, testing and engineering facilities are completely explained in our new book entitled "Prospecting For Perfection". Free copy sent upon request.

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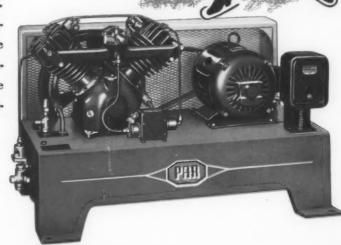
ATTENTION REFRIGERATION ENGINEERS

Our Valves, Dehydrators, Strainers, Manifold Assemblies, Accessories and Fittings are illustrated and described in our new catalog. Write for your copy today.



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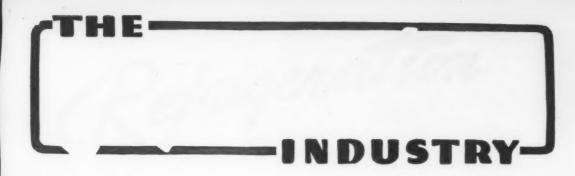
Manufacturing Corporation

General Offices, Toledo 1 . Factory, Defiance, Ohio, U.S.A.

NOVEMBER, 1946

JACK & HEINTZ the New Force In Refrigeration





VOLUME 3, No. 11

NOVEMBER, 1946

THIS MAGAZINE has no official affiliation with ANY group, society or association. THE COVER . . . New coaches now under construction for some of the nation's leading railroads will be "ambassadors of air conditioning" for millions of American travelers, and may help pave the way for wider use of comfort cooling in the home. One type of new railway cooling equipment is described in the story on page 40 of this issue.

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CONTENTS

| USEFUL LITERATURE |
|--|
| BTU'S |
| SERVICE WHILE YOU WAIT |
| COOLING FOR HUMAN COMFORT (Load Calculations—Part 2) . 2 |
| "LIQUID" REFRIGERATION SYSTEMS (1946-47 Equipment) 3 |
| PRACTICAL ACCOUNTING SHOWS PROFITS FOR CONTRACTORS |
| ABOUT PEOPLE |
| SELF-POWERED FREEZING PLANT |
| REFRIGERATION INDUSTRY NEWS |
| CONTRACTOR NEWS, ACTIVITIES AND PLANS 4 |
| NEW PRODUCTS |
| THE PRACTICAL REFRIGERATION ENGINEERING MANUAL 6 |
| HERE'S HOW |
| THE MARKET PLACE |
| INDEX OF ADVERTISERS |

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Use Quiet Starting and Operating CENTURY SCH MOTORS

Decause Century type SCH motors are ruggedly built, with accurately machined feet, rigid frame and end bracket construction and carefully balanced rotors, they are remarkably free from vibration. This feature plus unique bearing bumpers, large shafts and smooth diamond bored bearings makes Century compressor motors unusually quiet starting and operating. Their rugged construction assures long satisfactory service.

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THE NEW ALCO THERMO-LIMIT VALVE
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IMPORTANT QUESTIONS IN SELECTING A DRIER

- Does the material dry the refrigerant below the corrosion limits when placed in the liquid line? In the suction (vapor) line?
- 2. Does the material dry the refrigerant below the limits for ice formation with methyl chloride and the "Freon" refrigerants?
- 3. Does the material accomplish the drying in one passage of the refrigerant, or is it slow, i.e., requires several passages?
- 4. Does the material deteriorate in physical character in handling or when it removes water from the refrigerant?
- 5. Does the oil affect the drier adversely?
- 6. Does the drier corrode?



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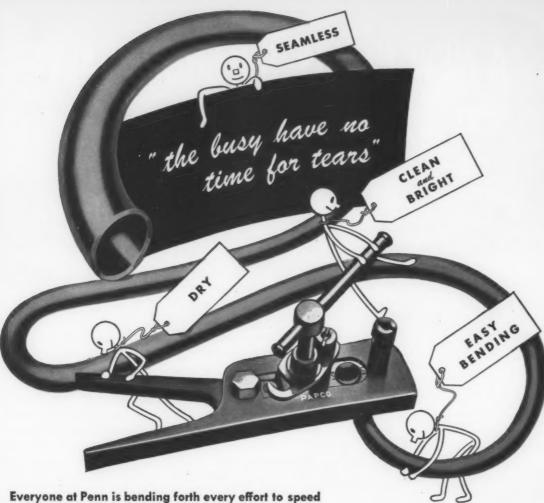


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up production so that we may meet the increased demand for more 'Superior' tubing. We regret delayed deliveries of Penn 'Superior' tubing and appreciate your patience and cooperation in placing orders early. 'Superior' tubing is perfect for your needs-better four ways; clean and bright, dry, seamless, and easy bending. 'Superior' tubing is worth waiting for. Plan now to use 'Superior' for all your tubing requirements "after the pressure is off".

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A NEW HENRY SOLENOID VALVE Worthy of Its Name



for "Freon" Methyl Chloride, Water, Air, Oil, Gas, etc.

Simplicity of design and ruggedness in construction, characteristic of all Henry Products, are also found in this new, medium-priced Type SV-11 Solenoid Valve making it ideal for small capacity installations. Incorporated in a standard outlet box, it can be quickly mounted through screw holes provided and electrical connections can be easily made by utilizing one of three knock-outs in outlet box. Coil can be removed and replaced without disturbing electrical connections to thermostat or other electrical devices. Efficient magnetic circuit provides low current consumption and "floating plunger" insures quiet operation. Type SV-11 meets all requirements of the Underwriters Laboratory.

Furnished with 3/8" FPT connections in following standard voltages: 115 volt, 60 cycle and 230 volt, 60 cycle.

OPTIONAL FEATURES FOR VOLUME REQUIREMENTS

Type SV-11 Solenoid Valve can be mounted in approved metal enclosure, less outlet box. Lock nuts threaded on body for mounting. Also available with larger outlet boxes where multiple electrical terminals are required.

• Henry Solenoid Valves include hard and soft seat types, with A C ratings 1 to 20 tons for "Freon." Also 10 tons and larger for Ammonia.

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HENRY VALVE COMPANY

Control Devices, Valves, Driers, Strainers and Accessories for Refrigeration and Air Conditioning and Industrial Applications

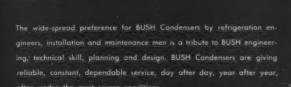
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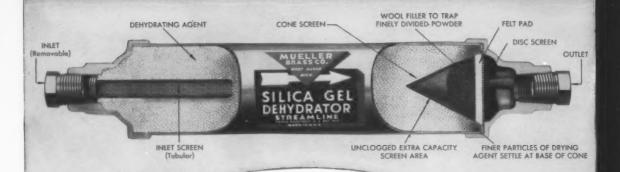








Here is the New MUELLER BRASS CO. REFILLABLE DEHYDRATOR



Readily Removable Inlet For Easy Refilling!

When recharging our new Dehydrator, simply remove the inlet plug—back out the slotted inlet screen tube—shake out the exhausted agent, then replace with new.

In addition to this convenient feature (see illustration above) Mueller Brass Co. Filters and Driers are provided with the CONE SCREEN OUTLET, a specially designed filtering element that adds immeasurably to the life and efficiency of Driers and Filters.

Almost all crystalline dehydrating agents are subject to a certain amount of abrasion while a dehydrator is in service. Small portions of the dehydrating agent break down into very fine powder and crystals. Unless a well-designed filtering element is incorporated in a dehydrator, these fine crystals and powder have a tendency to clog the outlet filter, resulting in restriction to the flow of refrigerant.

With the MBCO. CONE SCREEN OUTLET, such finer crystals and powder are forced to the base of the cone, leaving the center and tip of the screen open to the free flow of refrigerant.

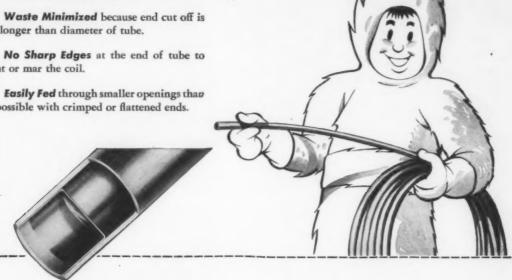
In adddition, the cone screen is filled with pure wool which traps such particles that are sufficiently fine to pass through the screen mesh.

Particular attention has been paid to screen areas in Mueller Brass Co.
Filters and Dehydrators, so that each size permits efficient passage to the maximum refrigerant volume that is used in a particular size refrigerant line.

MUELLER BRASS CO. PORT HURON, MICH.

Anaconda Cup Seal brings you 4 EXTRA BENEFITS ...

- 1. Clean, Bright, Dehydrated Interior maintained by soldered cup seal.
- 2. Waste Minimized because end cut off is no longer than diameter of tube.
- 3. No Sharp Edges at the end of tube to dent or mar the coil.
- 4. Easily Fed through smaller openings that is possible with crimped or flattened ends.



NEXT TIME you order copper refrigeration tubes, ask for Anaconda. Processes used in their manufacture include every procedure which can give you a more dependable, easy-to-use, trouble-free tube. Made of 99.9% pure copper, deoxidized to increase corrosion resistance, thoroughly and uniformly annealed throughout their entire length, Anaconda Refrigeration Tubes are easy to bend, and readily flared without cracking.

Anaconda Dehydrated Copper Refrigeration Tubes are available in all standard sizes up to and including 3/4" O.D. and are usually stocked by distributors in coils of 25, 50 and 100 feet. Longer

lengths are available on special order. They are manufactured in accordance with A.S.T.M. Specification B68-43. *Patent Applied For

AMERICAN VIBRATION ELIMINATORS



American Vibration Eliminators exclude vibration and compensate for thermal expansion in pipe systems.

Pressure-tight, safe for conveying costly gases or liquids, such as refrigerants, American Vibration Eliminators are easily installed. For catalogue, write American Metal Hose Branch, Waterbury 88, Connecticut.



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Complicated Equipment Produces this Safe, Non-Corrosive Refrigerant

This labyrinth of piping, valves, gauges and pumps is part of the plant where "Freon" safe refrigerants are made. Highly specialized apparatus—plus utmost care and "know how"—insures purity and uniformity...factors which guard against corrosion, oxidation or other injury to the precision parts of modern refrigerating systems.

From the very beginning, and throughout the highly complicated manufacture of "Freon"—a process requiring a wealth of technical knowledge—each step of the operation is under constant chemical and physical control. Rigid specifications *must* be met. Standardized tests provide a continuing check, both on production efficiency and

the exceptional purity and quality of these ideal refrigerants.

To insure long-lasting, trouble-free operation of modern, compact refrigerating systems . . . and to obtain maximum refrigerating satisfaction in commercial, frozen foods, and low-temperature industrial installations, specify equipment designed to utilize "Freon". Consult our Engineering Department for specific details. Write, Kinetic Chemicals, Inc., Tenth and Market Sts., Wilmington 98, Del.

IMPORTANT FEATURES OF "FREON" SAFE REFRIGERANTS

- 1. Freedom from moisture...less than 25 parts per million.
- 2. Narrow boiling point range—confined within limits of 1/2°C.
- 3. Less than 2% of insoluble gases in vapor phase.
- 4. Freedom from acids. There are none in "Freon".
- 5. Freedom from impurities ... less than 1/20 of 1%.



ROUBLE IS GONE!

When You Use

PEERLESS EXPANSION VALVES

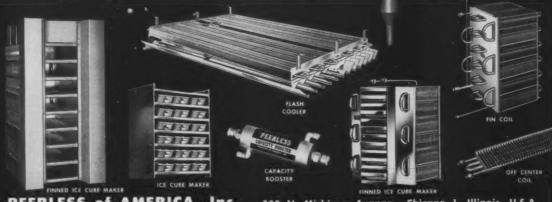
With PEERLESS VL "Velvet Action" Expansion Valves in the vital control spot of a refrigeration system, breakdowns due to jerky valve movements, with resultant over-feeding and under-feeding, are eliminated. Steady, even control is maintained by PEERLESS VL Valves because of sound basic design, careful manufacture, and highest grade materials—all proven in performance. The satisfaction obtained with PEERLESS Expansion Valves is duplicated in all other PEERLESS products. For performance, it's PEERLESS!

SOLD THROUGH LEADING REFRIGERATION SUPPLY WHOLESALERS

One of the many superior features of these valves is the dependable PEERLESS Orifice Cartridge which accurately measures and governs the flow of refrigerant. Four sizes for adjustment to capacity range. Send for folder showing details of valve construction.







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New End Seal—keeps tube clean. Fits anywhere tube does—need not be removed till ready for fitting connection. 50' and 100' lengths.



Octagon shape of package prevents two-layer coil of tube from shifting—maximum package saves shelf space—may be reused for keeping cut coils clean and identified. Evolution of the course ize label. Ask your parts distribution of the course in the extra bandy package.



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extra handy package..



copper tube fittings . . .

CHASE Wrought Copper Fittings expand and contract with the tube—joints are permanently tight! They fit the tube accurately—there are no inside ridges to hamper refrigerant flow.





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This is the Chase Network — handlest way to buy brass

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DRYSEAL PIPE THREADS

An improvement in tube fittings every refrigeration man should know about . . . Now being furnished in

IMPERIAL TRIPLE FITTINGS

The Society of Automotive Engineers has issued specifications for an improved type of pipe thread. This new pipe thread gives pressure-tight joints without the use of lubricant or pipe dope. It is known as the Dryseal American (National) Standard Taper Pipe Thread and varies from the American Standard in that:

- There is a difference in the truncation of roots and crests of threads. (See "A" at right.)
- 2. Effective length of thread has been made consistent for all sizes, with sizes over 1/8" lengthened appreciably. (See illustration below.)
- Closer control of gaging is required to assure proper diameter, form, taper, etc.

NO NEED TO USE DOPE ON THREADS

In the Dryseal Pipe Thread the truncation of the root is greater than the truncation of the crest, and contact between root and crest is assured in assembly before flanks of threads engage. (See "B" at right.) The elimination of clearance at crest and root prevents spiral leakage and renders joints pressure tight without lubricant or pipe dope and without application of excessive wrench torque.



NEW-WITH DRYSEAL



er pipe thread fitting with

FULL LENGTH DRYSEAL ON IMPERIAL FITTINGS

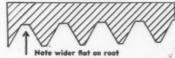
Full length Dryseal Taper Pipe Threads are being incorporated on pipe thread connections on all Imperial Flared Tube Fittings, Many shapes and sizes are already coming through with these threads; others are being changed. All sizes 3/8" O.D. and larger also have the Imperial Triple-Seal feature on flare connections, an important extra protection against leakage.

See Your Jobber

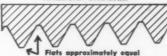
THE IMPERIAL BRASS MANUFACTURING COMPANY 534 S. Recine Ave., Chicago 7, III.

How Dryseal Differs from the American Standard .

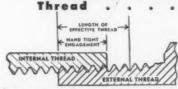
DRYSEAL THREAD



AMERICAN STANDARD



Assembling Dryseal







HAND TIGHT Note that crests and roots of threads have already engaged while flanks of thread are apart.

WRENCH TIGHT Note that flanks or sides of thread have now engaged making a tight metal-to-metal seal.

Flats and clearances in drawings are exaggerated to emphasize distinctive features of Dryseal threads.



Fittings • Valves • Dehydrators • Fitters Floats . Charging Lines . Tools for Cutting. Flaring, Bending, Coiling, Pinch-Off and Swedging

THE MARK OF TECHNÍCAL SECREPCE IN NATURAL AND SYNTHETIC RUBBER

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DAYTON 1, OHIO

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Catalog No. 44—for dealers selling replacement items.

BETIS

FOR REPLACEMENT SERVICE

Catalog No. 150for designers of new equipment.



Brunner Refrigeration helps you serve better

IF COMPRESSOR LOSES ITS OIL

The Brunner Refrigeration Service Manual gives the following possible causes and remedies:

PROBABLE CAUSE

Lack of refrigerant:

Improper evaporation design:

Carrying too high a superheat at compressor suction:

Compressor operating too fast:

Short cycling:

Clogged expansion valve or strainer:

Insufficient oil-gas ratio charged into system:

Traps in the suction piping or condensing unit too high above the evaporator:

TEST and REMEDY

Locate leak and recharge.

Too low a gas velocity through the evaporator. Should not be less than 1200 feet per minute.

Relocate bulb of expansion valve or adjust liquid feed to return wet gas to compressor.

Return compressor speed to factory recommendation.

See observation B.

Clean or replace.

Add oil to crankcase.

Drain return tubing toward compressor. Loop tubing every 10 feet of vertical rise.



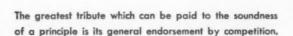
densing Units? Of course not. They are common to all refrigeration systems and are emphasized in the Brunner Service Manual. That's why you should not be without a copy where troubleshooting. We'll send you a copy for only \$2.50. Write to:



BRUNNER MANUFACTURING COMPANY, UTICA 1, N. Y., U. S. A.

NOVEMBER, 1946





Thirteen years ago "Detroit" pioneered gas charging. Now, nearly all manufacturers of expansion valves have adopted gas charging, at least in principle. Gas charging has become the accepted standard of the refrigeration industry.

Gas charging puts a definite limit on maximum operating pressure—guards against motor overload. Often this makes possible use of a smaller motor, since it does not have to work against excessive pressure during the pull-down period. Gas charged valves balance the system more quickly when starting up, insuring fast, positive action.

"Detroit" Valves offer gas charging in the simplest, most effective form. A single efficient power element is used.

All "Detroit" Expansion Valves are gas charged, which accounts for their wide popularity.



No. 673 Thermostatic Expansion Valve

For many years the standard of the refrigeration industry. Orifice sizes 344" to 3½" with capacities up to 3½ tons Freon 12 or Sulphur Dioxide and 6 tons Methyl.



No. 787 "Dura-fram" Expansion Valve

Representative of the "Detroit" large capacity line. No. 788 is rated 12 to 20 tons—No. 787—6 to 11 tons—No. 786—3 to 6 tons. Has external equalizer connection and can be furnished with No. 790 distributor with either 6, 12, or 18 openings (¾" each) for multiple distribution.

2125

DETROIT LUBRICATOR COMPANY General Offices: 5900 TRUMBULL AVENUE DETROIT B, MICHIGAN

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Division of American Radiator & Standard Sanitary curporation and addition Representatives — RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL TORONTO, WINNIPEG.

"Detroit" Healing and Refrigeration Controls * Engine Safety Controls * Safety Float Valves and Oil Burner

**Accessories * "Detroit" Expansion Valves and Refrigeration Accessories * Stationary and Locametive

Lubriculars



Humidity:

ZERO

inside REVERE DRYSEAL TUBE

A BONE-DRY interior is one of the sure advantages you get in each coil of Revere Dryseal Copper Refrigeration Tube. All moisture is out—sealed out. That is why users of this tube need not worry about "stuck" expansion valves due to tube moisture.

You also get tube of extra fine quality in Revere Dryseal. It is made of deoxidized copper, and is kept oxide-free during every manufacturing step. For example, in annealing this tube to dead softness so that you can work it easily, Revere does the heating in a controlled atmosphere.

Made for refrigeration, air conditioning, heat control, bottled gas and other exacting services, Revere Dryseal Tube is 99.9+% pure copper. It comes in sizes from ½" to ¾" O.D., with .035" wall, and is standard in 50-foot coils. It is sold by Revere Distributors in all parts of the country. The Revere Technical Advisory Service will gladly work with you in solving difficult problems.

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- * Reduce running time up to 20%

. . . prevent sweating and frosting of suction lines, as well as oil slugging, and bring "on-the-line" jobs within the normal cycle range.

"Fractional Tonnage" ECONOMIZERS

. . . are no longer considered "unnecessary gadgets." Data now available substantiates all claims for appreciable increase in overall capacity. One

should be installed in each evaporator circuit of every commercial and industrial refrigerating system. Pressure drop is negligible . . . capacity per unit size is extremely high . . . all joints are silver soldered.

"Hy-K" ECONOMIZER-ACCUMULATORS

... have high ratio of prime to secondary, and liquid to vapor surface ... Positive vapor contact with all surfaces ... Maximum capacity per unit size.

"Hy-K" Economizer-Accumulators are equally suited for use in high, medium or low temperature systems.

If you haven't a copy of the new Superior Catalog R-2, request one today.

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COMMERCIAL
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ats are silver

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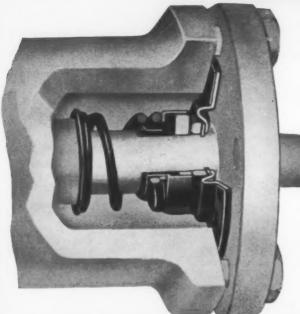


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The fastest and most satisfying way to find out why ROTARY SEALS have won such an outstanding reputation among servicemen is to install them and see how they operate. That is all we ask. We know that if "you are the judge" the verdict will be a favorable one. Our case is based on the premise that THE FEWER WORKING PARTS THERE ARE, THE LESS DANGER THERE IS OF TROUBLE.

We are specialists in the design and manufacture of only one product—ROTARY SEALS. All of our research and engineering knowledge goes into the producing of this item alone. That is why we can offer such a liberal guarantee on ROTARY SEAL RE-PLACEMENT UNITS. Over seventeen years of precision manufacture backs every shipment which leaves our plant.

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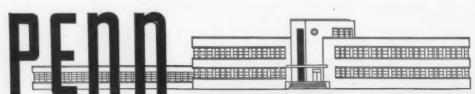


Here, Fault-Finding Is a Virtue!

And our inspectors and Quality Control Engineers have it to a great degree! For, that's why they're on our payroll...to find fault. It's their job to see that every PENN Control meets rigid specifications... to see that you get the best refrigeration controls that can be built. This engineer, for instance, guards you against the destructive vibration that burns contacts, reduces control life and damages relays and contactors. Here, by means of a stroboscope he analyzes the contact mechanism action of these two refrigeration controls on a vibrator machine.

In PENN'S modern factory you'll find all our engineers and inspectors equally skilled and careful. Better and more dependable controls are the result... yet you pay no premium for this extra value. Ask your jobber for PENN Controls. You'll find the exact type you need in PENN'S complete line of refrigeration controls for temperature and pressure applications.

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AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS



• How We're Doing. Elsewhere in this issue are presented data on shipments of commercial refrigeration and air conditioning equipment for the period July-December, 1945. Companies included in the report, the Department of Commerce estimates, accounted for more than 98% of the total value of equipment shipped during the period; 207 manufacturers reported, compared to 196 for the first half of that year.

A marked increase in shipments of nearly all types of unitary equipment was shown during the last six months of 1945. Total number of units shipped increased 21%, from 97,742 in the period January through June to 118,-217 in the period July through December.

Total number of units shipped during the entire year of 1945 increased to 215,959, a gain of 41% over the 1944 total of 153,026 units. However, shipments of unitary equipment during 1945 were still only 64% of the 338,796 units shipped during 1940, the last prewar year.

● Too Many Dealers? Further expansion in the number of retail dealer outlets in the home appliance field may seriously affect the entire industry when business conditions revert to normal, H. M. Kelley, Frigidaire appliance sales manager, told members of the International Association of Electrical Leagues at a recent meeting in New York City.

"The transition from a sellers' to a buyers' market will cause a high mortality rate among retail appliance dealers," Mr. Kelley declared. He listed as probable principal causes of failure: lack of capital, inability to secure brand name franchises, poor store locations, inexperience in merchandising, improper guidance by manufacturers, and poor customer service. "We, as an industry, will never be better off than our retail dealers," he asserted.

He pointed out that recent surveys show there is one major appliance dealer for every 435 homes in the country today. Prewar, there were in the United States about 25,000 major appliance dealers for 25 million electric meters—or about one dealer for every thousand wired homes. Best estimates today show that there are between 50,000 and 60,000 dealers—one for every 475 metropolitan homes and one for every 300 electric meters in rural sections.

Mr. Kelley said that in the case of refrigerators, it appears that the sellers' market will last until the middle of 1947. "However," he said, "there is much duplication

on dealer's prospect lists, prices are rising and earnings are reduced. Therefore, the backlog of demand may be reduced so that a buyers' market for refrigerators may arrive sooner than is expected."

Of the home freezer, Mr. Kelley said there is a wide difference of opinion regarding its potentialities. "Estimates of sales have run all the way from 300,000 to over two million units a year. We believe that this market has been greatly overestimated. Sizable casualties are being predicted in this field. It is believed that this product is already in the buyers' market. In urban markets the home freezer is a luxury item. The availability of frozen foods, rented home freezers, locker plants and greater storage space in home freezers are having a depressing effect upon home freezer sales in these areas. In the farm market where the home freezer can be justified on economic grounds, the market has been oversold as to the capacity needed," Mr. Kelley said.

• Frozen Food Industry Growing. Most recent industry statistics on the frozen food industry indicate that 78 more firms are processing frozen fruits, 87 more are processing frozen vegetables, 69 more are processing frozen baked goods, and 88 more are processing cooked foods than were performing these services a year ago.

SEE THE SHOW AGAIN

Our December issue will be one you won't want to miss. We plan to make it an "up and down the aisles at the All-Industry Show" issue, with complete as possible coverage of all new products introduced, new plans revealed, accounts of what happened at industry association meetings, and other important information.

For those of you who went to the Show, the December issue will recall the products you saw, the men you met, the meetings you attended. For those of you who didn't get to Cleveland, the issue will provide the highlights on all that you might have seen and done.

In either case, it will be the kind of an issue you will want to read—and to keep.

Pheasant Hunters' Guide. South Dakota, which is generally acknowledged as the pheasant hunters' paradise, is compiling a guide for the use of visitors from other states who come up there during the season to do some shooting. In addition to lodges and shooting sites, the guide also lists the names and locations of frozen food lockers and storage plants. Apparently the state has come around to the conclusion that it's the "take-home" bag that really matters, and proper preservation figures strongly in that phase. Ray Kromer, formerly a refrigeration contractor in Cleveland, who operates Ring Neck Lodge in Aberdeen, S. D., reports that his ability to assure patrons of getting their bag back home in A-1 condition has had as much to do with his lodge's popularity with hunters as any one single factor.



H. Comnock, president of Little Rock Refrigeration Co., initiated his company's effective policy of prompt and efficient service.

Service

Having trouble getting new equipment to sell? Then take a tip from this dealer who keeps his customers happy by promptly servicing old units

By Grier Lowry

ONE way to keep a prospective appliance customer happy is to promptly deliver to him the new equipment which he has ordered.

Another and equally important way—in these days when new appliances still are far more easily sold than delivered—is to assure the prospect of prompt and efficient service on his present equipment while he is waiting for the day that his order for the new appliance can be filled.

It is just such a service policy which is serving as the guiding rule for the operations of the Little Rock Refrigeration Co., Little Rock, Ark., dealer in refrigeration and air conditioning equipment, household appliances, and locker plant contracting.

Established by H. Comnock, president of the firm, this postwar policy of keying new equipment sales to first-rate service facilities is fast building a widespread and incalculable bulwark of goodwill among the company's customers.

Service has been a mainstay of the

Little Rock company's operations ever since the firm was organized, but it has assumed an even greater importance since the pinch of the war-born shortage of new equipment has really begun to be felt.

"We take the position," says Mr. Comnock, "that no piece of equipment is better than the service extended it when needed. The average buyer is happier with cheap equipment, well serviced, than with quality merchandise which is poorly serviced."

It would be impossible to gauge the amount of customer good will generated by the service department, or to accurately appraise the part which this branch of the business has played in fashioning the salesstudded future envisioned by the company's chief executive. But the company shows no tendency to rest on its service laurels.

In their planning to assure the company of its full share of sales which are bound to open up once new equipment again becomes available in real quantity, Mr. Comnock and his associates are including the majority of the principal time-tested merchandising stratagems.

This aggressive sales program was formulated only after surveys had been conducted to reveal the extent of business potentialities, and "screen-



ings" had been made of the various possible sales approaches.

The figures collected by the company during these surveys indicate that there will be no dearth of competition for the home owner's folding money, for the surveys revealed that there are now some 32 firms in this area scrambling for appliance business, compared with only 17 firms in

are again available.

An allocation of two percent of gross receipts for newspaper advertising is a regular Comnock practice. Cuts and mats supplied by manufacturers are used in advertisements which the company sponsors in both the morning and afternoon Little Rock papers. At least twice a week, eye-catching display ads in these

ing methods and products with a dayto-day training program. Slide films, sales courses, product folders, and other material supplied by manufacturers and trade associations are employed.

Returning war veterans on the service staff are given a "refresher" course. But it is the sales staff that is being given the most thorough briefing in sales technique and a workable knowledge of the mechanics of products. Normally, a sales staff of eight to twelve outside salesmen is maintained, but as merchandise becomes available this staff will be increased.

Mr. Comnock and his company are preparing to get their share of the air conditioning business which they feel will be forthcoming, as Arkansas has lagged far behind the rest of the country in air-conditioning installations.

Also, the company designs, lays out, builds, and equips frozen food locker plants, meat curing plants, and cold storage rooms of all kinds. Expansion of established locker plants and the erection of new plants has meant quite profitable dividends for the Little Rock Refrigeration Co. in the past three years. As equipment and material is obtainable in greater volume, this phase of the business is expected to grow.

But underlying all this expansive program for sales development is a rock-ribbed foundation of dependable service—service for all the company's customers, service for their old equipment while they wait for delivery on the new.

while you wait

this field before the war.

Greater Little Rock has experienced a 40% increase in population during this same period, the figures show. Some 5,429 additional homes have been wired for electricity in the past five years, and 662 more miles of wire have been strung in the rural area.

That the Little Rock Refrigeration Co. is in shape to garner a goodly portion of the business resulting from this increase of electrical facilities is indicated by the company's prospect book, which has been kept on a running basis since 1942. Just as an example, this book lists 647 "dependable" prospects for refrigerators. This "dependable" classification includes only those prospects who have expressed a definite desire to buy the particular brands of products sold by the company, and a willingness to wait until these particular products

newspapers either herald the arrival of new electrical merchandise or boost the service department.

boost the service department.

"It is impossible," admits Mr. Comnock, "to estimate the effectiveness of our newspaper advertising program. We only know that when the advertising program is not consistently pursued, sales drop off."

Merchandising pieces, stuffed in outgoing mail, are used almost exclusively to exploit the commercial market. A periodical endeavor is made via mail to push both sales and service among commercial users of power equipment. Up-to-date files are maintained which list all of the commercial equipment users. These files are kept in current condition by bulletins supplied by a credit association.

The Little Rock Refrigeration Co. staff keeps up-to-date on modern sell-

Cabinet refinishing plays an important role in preparing trade-ins for resale. Both household and commercial units are handled.

This modern shop equipment is used to repair washing machines as well as refrigerators and air conditioning units of all types.

COOLING FOR HUMAN COMFORT

Load Calculations (Part 2)

By S. C. Moncher
Regional Manager
Electric Power Equipment Co.

THIS series of articles on the fundamentals of comfort cooling is designed to serve two purposes: (1) provide those just entering the air conditioning field with a basic understanding of the factors involved in comfort cooling; and (2) enable the trained air conditioning engineer to discuss comfort cooling applications in a non-technical language that the prospect or the customer can understand.

DETERMINATION OF HEAT LOAD: It is evident from the above discussion that the determination of the total heat gain of an enclosure is a detailed process which must take into account (1) conduction and solar heat gains, (2) internal heat load, including the heat of outdoor air entering the room by infiltration, and (3) heat from outdoor air brought directly to apparatus. As an aid to determining Item 1, namely, conduction and solar heat gains, Tables V to VII are presented.

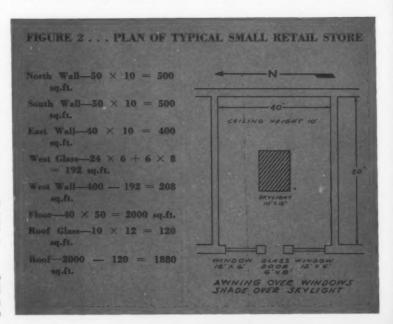
Table V gives the combined conduction and solar gain for roofs and non-shaded exterior walls of various constructions at different hours of the day. Table VI gives solar radiation through glass at different hours of the day for various exposures. Table VII gives the conduction gain through floors, ceilings, shaded exterior walls, and interior walls of various constructions.

The values appearing in these tables are of necessity approximations in order to cover a large range of applications. Inasmuch as heat gains through barriers represent only a small part of the total load, however, no serious error will be introduced in using these approximate values for small installations. When more accurate calculations are desired, the reader is referred to the extensive tables appearing in the ASHVE "Guide" and the publications of various manufacturers.

EXEMPLARY PROBLEM: Let us now proceed to calculate the heat load for a typical small retail store, a plan of which is shown in Figure 2. We

shall assume that this store is bounded on either side by a non-cooled store. which attains a maximum temperature of 90 F. We shall further assume that the front of the store faces west, and that there is no structure either above or to the rear of the store. The only exposed walls, therefore, are the east and west walls, the north and south being considered as interior walls. There is a basement running the full length and width of the store, and we shall assume a maximum basement temperature of 85 F. The store is located in New York City, where design temperatures are 95 DB-75 WB outdoors, 80 DB-67 WB indoors. The walls and roof are light masonry construction, while the floor is wood on wood frame. An awning is provided over the front windows and door. Total light and appliance wattage is 15,000, of which only 5,000 watts are in use on a sunny afternoon. There are five employees, and a peak of about 25 customers occurring between 2 and 5 p.m.

HOUR OF PEAK LOAD: Before we can start our calculations, it becomes necessary to determine the hour when the peak load will occur. This is relatively simple, for the large glass area exposed to the west and the maximum number of people arriving between 2 and 5 p.m. make it



obvious that the peak load will occur between 3 and 5 p.m. Therefore, we shall take 4 p.m. as the hour of peak load.

ESTIMATE FORM: For convenience, it is desirable to have a form in which to enter heat load calculations. This form serves the dual purpose of segregating sensible and latent heat loads, and at the same time ensuring that no sources of heat are overlooked. The form presented here, Figure 3, was devised by the author for a simple and comprehensive presentation of all heat loads.

EXPLANATION OF ENTRIES IN ESTIMATE FORM: Part A of Figure 3 provides for all conduction and solar gains, the unit values for which are listed in Tables V to VII. Whenever a combined conduction and solar gain through a wall or roof is involved, the factors in Table V are used. Due to the heat transmission lag of the walls and roof, a constant temperature difference of 15 F is assumed at all hours of the day for outdoor design temperatures of 90 to 95 F DB; and a constant temperature difference of 20 F is assumed for all higher outdoor design temperatures.

When dealing with non-solar conduction losses, such as occur in the case of shaded, north, or interior walls and floors or ceilings, the heat gain factors given in Table VII are used. The temperature difference used with these factors is the actual temperature difference at the time of peak load as shown in Table IV. (See R. I., September, 1946, page 32.) Solar gains through glass, as given in Table VI, are tabulated in Btu per hour without respect to temperature difference, so that the temperature difference does not enter into the calculations.

Hourly Heat Gain

The hourly heat gain for each item listed in Part A, therefore, is the product of three values, (1) the square feet of area, (2) the corresponding heat gain factor, and (3) the temperature difference when relevant. Naturally, all heat gain in Part A is sensible heat.

Part B of Figure 3 takes into account the heat load due to the people and equipment within the cooled enclosure. If we take 400 Btu per hour as the heat given off by a person not

→ TABLE V ←

Combined Conduction and Solar Gains Through Roois and Exterior Walls
Bitu per hour per square foot per degree of temperature difference,

(See notes below for instructions in use of this table.)

| | | TIME (su | n tim | e) | | | |
|------------|-------|----------|-------|--------|------|------|-------|
| | 10 AM | Noon 2 | PM | 4 PM | 6 PM | 8 PM | 10 PM |
| | FE | AME CON | STRU | CTION | | | |
| East Wall | .2 | .2 | .3 | -4 | .4 | .3 | .3 |
| South Wall | .2 | .3 | .3 | .4 | 4 | .4 | .3 |
| West Wall | .1 | .2 | .3 | .3 | .4 | A | .4 |
| Flat Roof | .2 | .4 | .6 | .6 | .85 | .3 | .1 |
| | LIGHT | MASONRY | CON | STRUCT | TION | | |
| East Wall | .2 | .3 | .3 | .4 | A | .5 | .5 |
| South Wall | .2 | .2 | .2 | .33 | A | .4 | .5 |
| West Wall | .2 | .2 | .2 | .3 | A | A | .25 |
| Flat Roof | .3 | .7 | .8 | .8 | .7 | .5 | .2 |
| | HEAVY | MASONRY | CON | STRUC | TION | | |
| East Wall | .2 | .2 | .2 | .3 | .3 | A | .4 |
| South Wall | .2 | .2 | .2 | .9 | .3 | .3 | .3 |
| West Wall | .1 | .1 | .2 | .2 | .2 | .3 | .8 |
| Flat Roof | .22 | A | .6 | .6 | .55 | .3 | .2 |

NOTES: (1) Assume a temperature difference of 15 F between outdoor and indoor temperatures for all hours of the day except for those sections of the country where outdoor design temperatures exceed 95 F DB when a temperature difference of 20 F should be assumed.

(2) For southeast and southwest exposures, use the values for east and west; for northeast and northwest, use 50% of these values.

(3) All walls are assumed to be finished on the inside with lath and plaster. Roof is assumed to have celling below.

(4) If insulation is provided, reduce values given as follows:

1" to 2"-50% reduction

2" to 3"—60% reduction 3" to 4"—70% reduction

→ TABLE VI←

Solar Radiation Through Glass

(See notes)

Btu per square foot of glass per hour

| TIME | | EXPOSUR | IE. | |
|------------|------|---------|------|------------|
| (sun time) | East | South | West | Horizontal |
| 8 AM | 190 | 20 | 15 | 175 |
| 10 AM | 120 | 70 | 15 | 250 |
| I2 Noon | 20 | 100 | 20 | 300 |
| 2 PM | 20 | 70 | 120 | 250 |
| 4 PM | 15 | 20 | 200 | 175 |
| 6 PM | 10 | 8 | 125 | 50 |

NOTES: (1) For hollow glass blocks, use 40% of values shown.
(2) The heat conduction factor for glass is 1.15 Btu per hour per square foot per degree of temperature difference. If the heat gain due to conduction exceeds the solar heat gain, use the former value.
(3) For southeast and southwest exposures, use the values for east and west; for northeast and northwest exposures, use 50% of these values.
(4) If shades are drawn full or venetian blinds are used, reduce factors by 50%. If awnings are provided, reduce factors by 75%.

→ TABLE VII ←

Conduction Gains Through Floors, Ceilings, Windows, and Walls

Btu per square foot per hour per degree F temperature difference

| | (See | notes) | |
|---|------|--|-----|
| Windows (single glass) Glass building blocks | 1.15 | Interior masonry wall— unfinished | .50 |
| Frame floor—no ceiling Frame floor and ceiling | .35 | Interior masonry wall— finished | .30 |
| Concrete floor (light)—no ceiling | .60 | North or shaded exterior wall— frame construction | .25 |
| Concrete floor (heavy)—no ceiling | .50 | North or shaded exterior wall— light masonry construction | .30 |
| Concrete floor and ceiling Interior frame wall | .35 | North or shaded exterior wall— heavy masonry construction | .20 |

NOTES, (1) Unless otherwise specified, all walls are assumed to be finished with lath and plaster.

(2) If insulation is provided, reduce values given as follows:

1" to 2"-50% reduction

2" to 3"—60% reduction 3" to 4"—70% reduction particularly active, 220 Btu may be attributed to sensible heat and 180 Btu to latent heat.

For people mildly active, such as dancing or light manual work, we would use the values 220 Btu per hour for sensible heat and 450 Btu per hour for latent heat. Watts are converted into Btu on the basis of 3.4 Btu of sensible heat per hour per watt. Total sensible and latent heat gains are the product of the quantity involved multiplied by the corresponding factor.

Part C of Figure 3 takes care of the heat load due to infiltrated outdoor air, which becomes part of the room load. It has been noted before that only the outdoor air which enters directly into the room becomes part of the room heat load. Any outdoor air brought directly to the cooling unit has its heat and moisture removed before entering the room, and, therefore, does not contribute to the room load. To be sure, the total load remains the same, regardless of whether the outdoor air enters directly to the room, or is first brought to the cooling unit.

Effect of Heat Load

In the former case, however, it becomes part of the room load, and its heat and moisture must be absorbed by the air supplied from the cooling unit. This results in a larger volume of conditioned air being necessary than if the outdoor air were brought directly to the cooling unit. This distinction between outdoor air brought directly to the cooling unit and outdoor air introduced into a cooled room will be discussed further when we come to consider the determination of the amount of air which must be circulated through a cooling unit in order to maintain desired room conditions.

In the problem under consideration, we shall figure on providing about 12 cfm of outdoor air for each occupant, making an approximate total of 350 cfm required, which we shall bring directly to the cooling unit by means of a duct. Inasmuch as normal infiltration, based on one air change per hour, would be 20,000 ÷ 60 = 333 cfm, we shall assume that a positive air pressure will be maintained indoors, and that infiltration may be considered negligible.

The only data in Part C which we shall fill in, therefore, are Items 1 and

FIGURE 3: HEAT GAIN ESTIMATE FORM

A. Conduction and Solar Gain

| Item | Area (Square feet) | Factor* | Temp. Diff. (Degrees F) | Sensible Heat Gain (Btu/hr.) |
|---------------|-----------------------|---------|-------------------------|------------------------------------|
| Shaded or Nor | th Wall | | | |
| Shaded or Nor | th Glass | | | |
| East Wall | 400 | .4 | 15 | 2400 |
| East Glass | | | | |
| South Wall | | | | |
| South Glass | | | | |
| West Wall | 208 | .3 | 15 | 940 |
| West Glass | 192 | 50 | | 9600 |
| Roof | 1880 | .8 | 15 | 22560 |
| Roof Glass | 120 | 90 | | 10800 |
| Ceiling | | | | |
| Floor | 2000 | .35 | 5 | 3500 |
| Interior Wall | 1000 | .30 | 10 | 3000 |

*NOTE: Combined solar and conduction factors are for Btu per hour per square foot per degree. Solar gain factors are for total temperature difference, not per degree.

B. Occupancy and Appliance Load

| Item | Quantity | Sensible Heat Factor (Btu per hr. per unit quantity) | Latent Heat Factor (Btu per hr. per unit quantity) | Sensible Heat Gain (Btu/hr.) | Latent Heat Gain (Btu/hr.) |
|--------|----------|--|--|------------------------------------|----------------------------------|
| People | 30 | 220 | 180 | 6600 | 5400 |
| Watts | 5000 | 3.4 | | 17000 | |
| Horsep | ower | | | | |
| Gas | | | | | |
| Coffee | Urns | | | | |
| Steam | Table | | | | |

C. Infiltration Load

- 1. Heat Content of Outdoor Air 38.50 Btu per pound of dry air
- 2. Heat Content of Indoor Air 31.54 Btu per pound of dry air 3. Difference in Heat Contents \times cfm \times 4.5 = Total heat
- 4. Cfm \times temperature difference \times 1.08 = Sensible heat
- 5. Item 3 minus Item 4 = Latent heat

ROOM SENSIBLE HEAT 76400 Btu per hour ROOM LATENT HEAT 5400 Btu per hour

D. Outside Air Direct to Apparatus

- 1. Difference in Heat Contents \times cfm \times 4.5 = Total heat 6.96 \times 350 \times 4.5 = 10950 Btu per hour
- 2. Cfm \times temperature difference \times 1.08 = Sensible heat 350 \times 15 \times 1.08 = 5670 Btu per hour
- 3. Item 1 minus Item 2 = Latent heat 10950—5670 = 5280 Btu per hour

TOTAL SENSIBLE HEAT (76400+5670)=82080 Btu per hour TOTAL LATENT HEAT (5400+5280)=10680 Btu per hour TOTAL HEAT LOAD=92750 Btu per hour

2, the heat contents of the outdoor and indoor air respectively. These heat contents may be ascertained directly from the wet-bulb temperatures of the air by reference to Table I. (See R.I., August, 1946, page 46.)

The sum of the heat loads calculated in Parts A, B, and C will give the room sensible and room latent heat loads. These include all the heat which originates within or enters into the cooled enclosure, and as such represent the total heat load less the load due to the fresh air brought directly to the cooling unit.

Part D of Figure 3 is used for calculating the sensible and latent heat Continued on page 47

NOTICE!

to Air Conditioning and Refrigeration

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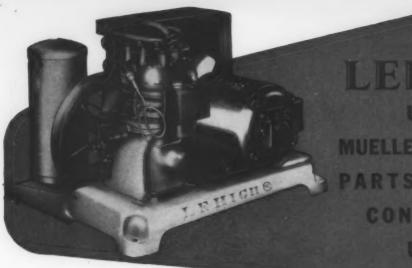
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PARTS IN THEIR

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UNITS

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BUILT-IN QUALITY TIME-TESTED PERFORMANCE

Mueller Brass Co. Valves, Fittings and accessories are sturdily and dependably built. They have a well-earnd reputation for built-in quality and time-tested performance.

The Mueller Brass Co. line of refrigeration products is exceptionally complete, and all products are designed and manufactured specifically for mechanical refrigeration work. THEY ARE USED BY ALL OF THE LARGEST MANUFACTURERS THROUGHOUT THE UNITED STATES.

OBVIOUS CONCLUSION: Mueller Brass Co. products must be good!

MUELLER BRASS CO.

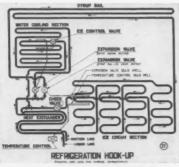
The "Lehigh Team" GOES ALL OUT FOR QUALITY

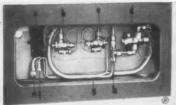
Lehigh's familiar advertising characters, the hustling, smiling "Lehigh Team", are glad to credit Mueller Brass Co. valves and fittings with an important share of the Lehigh quality story. The many acre, straightline Lehigh plant at Lancaster, Pennsylvania, utilizes the most modern, high speed, volume production methods—and in turn demands the best from its specialty suppliers.

Lehigh Heavy Duty Condensing units, equipped with Mueller Brass Co. valves and fittings have gained the respect and admiration of the refrigeration industry for their modern design, remarkable compactness per H. P., their smooth, quiet operation, and the quality of every detail in their construction.

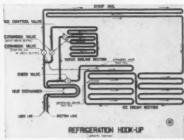
MUELLER Lehigh "M & E"

Two Names That Are Helping
To Improve the Science of Refrigeration











"LIQUID"

Refrigeration Systems

1946-47 EQUIPMENT

By J. G. Praetz

General Service Manager Liquid Carbonic Corp. Part 10

COLDSLEEVE MODELS 5001, 5002, 5003, 5004

THE new "Liquid Coldsleeve" fountains have been developed around the "holdover" principle to obtain lowest possible power consumption with simple trouble free operation.

Coldsleeve fountains (Fig. 26) have direct expansion on the entire fixture for the ice cream, syrup rail, and water cooling section evaporators. Simplified refrigeration control is designed into the fountain using three refrigeration valves, a single thermostatic expansion valve on the syrup rail-ice cream section refrigeration circuit, and a single thermostatic expansion valve with an ice control on the water cooling section evaporator.

The syrup rail is refrigerated by a "Coldwall" located close to the syrup jars. The refrigeration tubing is behind the stainless steel syrup rail lining and connected in series with the ice cream section evaporators.

The ice cream section evaporator is made in one assembly with silver soldered tubing connections between each sleeve. A primary refrigerated surface is obtained by wrapping copper tubing all the way around each of the individual copper ice cream sleeves. The sleeve-evaporator assem-

bly sets in a 4 inch cork insulated body and is completely sealed with special composition asphalt plastic material.

The refrigerant flow to the syrup rail-ice cream section is controlled by a thermostatic expansion valve located in the service panel on the front of the fountain. The refrigerant passes through the syrup rail first and then to the ice cream section.

The expansion valve bulb is inserted in a deep bulb well attached to the suction line at the end of the ice cream circuit. The well is accessible thru the dry storage compartment. The bulb should always be pushed to the bottom of this well and the well filled with petrolatum or Vaseline. The expansion valve is factory set and should not require readjustment.

On end dry storage units (Fig. 27), both the expansion valve and the temperature control bulb wells are located on the right hand side of the dry storage compartment. The switch well is located below the valve well. On center dry storage compartments, the temperature control bulb well is located on the left hand side of the compartment. The expansion valve bulb well is on the right side (from dispenser's position) of the dry storage compartment on both end and center storage fountains.

Water Cooling Section

The soda and water cooling section is refrigerated by a continuous loop high efficiency type direct expansion evaporator which builds up a substantial holdover capacity in the water bath ice formation.

The refrigerant flow is controlled by a thermostatic expansion valve while the ice formation is controlled by a thermostatic modulating valve (TMV65). The bulb clip on the ice control valve should be set downward Continued on page 63

²⁶ X-ray view of Liquid's new 7-ft. Coldsleeve fountain, Model 5002.

²⁷ Refrigeration hook-up of fountain with end storage compartment.

²⁸ Service panel for Coldsleeve controls.

(A) Temperature control (B) Expansion valve, water cooling section (C) Expansion valve, syrup rail and ice cream section (D) Ice control valve (E) Suction line (F) Liquid line (G) Heat exchanger (H) Check valve.

^{29 12-}ft. Complete fountain, No. 5103.

³⁰ Refrigeration hook-up, Complete fountain.

^{31 5}½-ft. Bobtail, Model 5202.



| | CHECK | | 1 | . 2 | 3- | 4 | | - DIRECT C | PERATING JA | OB EXPENSES | |
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PRACTICAL ACCOUNTING SHOWS Profits For Contractors

By Guy M. Carson Comptroller, Tallman, Robbins & Co.

THE refrigeration contractor, like any other business man, must spend money in order to make money. Furthermore, he is required by law to keep a record of his expenses.

As long as such records must be kept, the smart contractor will keep them simple enough to be readily understandable, effective enough to help him save as well as make money.

The accounting forms which are used to illustrate this article (Figs. 1 and 2) have been especially designed to suit the contractor's needs.

While these particular forms have been taken from the "Tarco Simplified Accounting System for Contractors", any set of books providing the necessary information and tying in with other records may be used.

Any record to be of real value must be accurate. To keep an accurate record, all disbursements should be made by check, although for convenience a Petty Cash fund should be maintained for small purchases.

On the "Cash Paid Out" form illustrated in Fig. 1 the net amount of the check is entered in the first column. Discount, if any, is entered in the second column and the total amount of the bill is entered in the third column. The total of column 3 should equal total of columns 1 and 2.

All expenditures are, therefore, in column 3. To classify and segregate these expenditures from column 3, everything in that column is distributed in columns provided for that purpose on the same double page.

Jobs Are Keyed

One of the cardinal features of this accounting system for contractors is that each job or project is keyed with a job number. Thus, all direct expenses, direct pay-roll, and money received from any particular job are all keyed with the same number so that eventually all the information appears on the "Job Record" sheet (Fig. 2) which bears this key number.

Let us review some of the entries shown in Fig. 1. Column 1 is always the net amount of the check, and this column will be the amount credited to your bank.

The first entry is payment of a bill for \$100 to a supply company for materials to be used directly on a job. A \$2 cash discount was taken, therefore the net amount is entered in Column 1, the discount taken is in Column 2 and the amount of the invoice in Column 3.

This purchase happened to be for Job No. 10. In the case of purchases for two or more jobs on the same invoice you would use one line up to and including Column 3, and in Column 6 enter the amount of money applicable to each job, showing the job numbers in the "Job" column. The totals would, of course, equal the total amount of the invoice in Column 3.

Item 2 appears to be a sub-contractor who also worked on Job No. 10, the net amount being \$125; therefore, that amount would be entered in both Columns 1 and 3, and then entered in Column 5 in which all payments to sub-contractors are posted.

All entries made to the right of Column 3 are merely distributions of the amount entered in that column for the purpose of keeping the ex-

| INDIRECT OPERATI | NG EXPENSES | 0FFICE SALARIES | OFF | IGE OVERHEAD | EXPENSES 17 18 TENT AND HEAT | furchase men | 20 OTHER EXPENDITURES 21 SONAL EXPLANATION AMOUNT |
|------------------|-------------|--------------------|------|--------------|---------------------------------------|--------------|---|
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| 80 | | 2750 | | 700 | - | | 4 |
| | | | | | 7500 | | |
| | | | 9 00 | 100 | | (6000) | Note due Boul 1000000 Jut. on Note 64h 10000 |

penditures classified and segregated, and to key all direct purchases for jobs.

The third entry is a permit from the City for \$20. This expenditure also pertains to Job No. 10 and being a miscellaneous item, the distribution is put in Column 9.

The fourth item pertains to another sub-contractor and is handled the same as the entry for the first sub-contractor.

Item 6, or Check No. 206, indicates that F. Hanley, the proprietor, drew out \$175 and charged it to his personal account, the distribution appearing in Column 20.

Check No. 207 is for the payroll. Our proprietor, in this case, pays by cash and draws one check for \$267.57, the total amount of the payroll.

\$201.27 is for direct payroll on jobs (this is keyed and entered on the jobs from the payroll). The balance of the payroll covers a truck driver who drew \$38.80 (see Column 10) and an office worker whose salary was \$27.50, which is entered in Column 14. The three items equal \$267.57 or the amount of Column 3.

The other entries are similar, and self-explanatory.

In the case of a payroll where pay-

ment is made by payroll checks to each worker (assuming the payrolls were *identical*), the entry would be the same except that the check numbers should be shown. For example, if 5 checks were used, it would be sufficient to show numbers of the first and last check in the column for "Check Numbers".

Check No. 211 is for Petty Cash to reimburse the cash drawer with \$10, \$9 of which apparently had been paid out for office supplies and \$1 for miscellaneous office expense.

Check No. 212 pays a note to the bank for \$10,000 plus interest of

Continued on page 55

| OWNER Vohn - | | 0 | | | PROJECT LO | | 411 W. Buthe | | |
|--|--|-----------|--|---|---|------------|--------------|--|---------|
| ADDRESS / A O US | STS | DATE 194. | | | DEBITS | BATE / 9#- | 06 - J | | CREDITS |
| Antorials abuse Aiscl. Exp. Cod. Conthanting Direct Job Costs Overhoad - 2 5 % | \$100.00 123.00 41.50 500.00 44.50 116.12 | Apr 1 | A. 3. C. Syf. G. M. H. nodre City Moiley Wager N. + K. Trueding | Material Sub Conte Burnit Sub Contre From P. R. Frt. | /0000 /1500 1000 7500 /1300 1/50 | Apr. 15 | | A service of the serv | 64000 |
| Total Costs | 580.62 | | 1 | | | | | | |
| Frofit on Job | 59.38 | | | | | | | - 3 | |



Arthur P. Shanklin has been appointed vice president and general sales manager of Carrier Corp., and Thomas E. Jervis has been named comptroller. Mr. Shanklin, a Carrier vice president since 1941, will be in charge of all of the firm's domestic sales activities. Mr. Jervis served during the war as comptroller of the Woodridge plant of Wright Aeronautical Corp.

Russell A. Johnson has been named assistant chief engineer of the

Betz Corp., Hammond, Ind., manufacturer of commercial cooling units. Mr. Johnson comes to the Betz organization from Frigidaire Sales Corp. of Chicago, where he had charge of engi-



neering of air conditioning and commercial refrigeration installations. During the war he served as production and field engineer in aircraft engine manufacturing for the Dodge-Chicago Division of Chrysler Corp.

Walter F. Benoit has been named eastern manager of sales to manufacturers for General Electric Co.'s air conditioning department. Mr. Benoit will make his headquarters in Bloomfield, N. J. Since joining G-E in January of this year, he has been attached to the New York City office of the air conditioning department.

D. G. Cameron, who joined Penn Electric Switch Co. two years ago as chief engineer, has been elevated to the position of vice president in charge of manufacturing. In his new capacity he will coordinate the functions of manufacturing, engineering, and plant engineering for all Penn Switch factories. Fred W. Hotten-

roth, who joined the company about -a year ago as assistant chief engineer, succeeds Mr. Cameron as chief engineer.

Several shifts in executive personnel have been announced by Chase Brass & Copper Co. Wallace C. Husted, vice president in charge of the company's Cleveland activities has been transferred to Waterbury, Conn., and placed in charge of organization and plant operations. John S. Coe, formerly assistant to Mr. Husted, has been elected a vice president of the company and will be in charge of all Cleveland activities. Richard R. Quay, company counsel, has been elected assistant secretary.

John M. Lambert has been appointed manager of consumer sales of York Corp. He will supervise all air conditioning and refrigeration sales made direct with users by the corporation's district office organization in the United States. Mr. Lambert joined the York organization in 1918 and most recently was manager of the corporation's National Service Office in Washington, D. C.

Addition of three salesmen has been announced by Lenk Mfg. Co. The new men, Jack V. McNeil, Jr., R. H. McNeil, and L. H. Prior have been assigned to covering the North Central states in the automotive, hardware and electrical fields. Each of these men has joined the Lenk sales organization following his release from military service.

James S. Locke, who has been Chicago regional sales manager of the air conditioning controls division of Minneapolis-Honeywell Regulator Co., has been named sales manager of that division in one of seven supervisory changes announced by C. B. Sweatt, executive vice president.

Mr. Locke transferred his headquarters to Minneapolis on Oct. 1.

George D. Guler, who has been sales manager of the air conditioning controls division, has been transferred to Atlanta, where he will serve as regional manager. He succeeds Albert H. Koch, who has been made Philadelphia branch manager.

Succeeding Mr. Locke in Chicago will be J. F. Cummiskey, while L. C. Johnson has been promoted to branch manager in Milwaukee, replacing Harold Pride, whos has resigned to accept a position with a Honeywell distributor.

J. C. Dorsey, who has been acting branch manager in Philadelphia, has been placed in charge of manufacturers business there and henceforth will supervise all such activity in the southern part of Honeywell's eastern sales zone.

In Minneapolis, T. S. Carley has been promoted to sales manager of the wholesale division, and in addition will continue as sales manager of Honeywell's stoker controls division.

Promotion of two executives and appointment of two others has been announced by Baker Ice Machine Co., Inc. A. L. Atherton, for 35 years a Westinghouse engineer, has been named manager of manufacture and will be in full charge of product design and production. Charles Knox, Baker's chief engineer since 1916, has

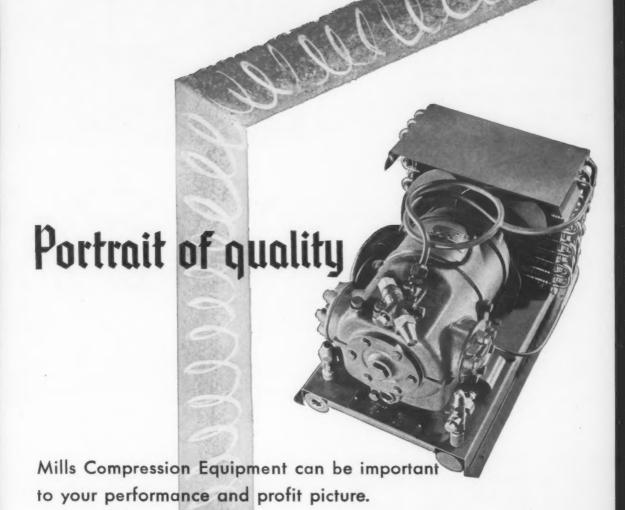




Mr. Atherton

Mr. Knox

been advanced to the position of plant manager in charge of the company's Omaha operations. John H. Stewart, another longtime Baker employe and former assistant production manager, has been appointed purchasing agent for the company. James H. Hill, who from 1928 to 1931 served as instructor of business management at the American College at Teheran, Iran, has been named assistant comptroller.



MILLS INDUSTRIES. INCORPORATED · REFRIGERATION DIVISION

4100 FULLERTON AVENUE . CHICAGO 39, ILLINOIS

NOVEMBER, 1946

View looking down Tunnel No. 1 in the Van Buren plant, showing air louvers at the right and blast units at the left. Note that each truck line has its own inlet and outlet doors; tunnels are separately refrigerated and provide for pre-cooling.

This plant, with a tunnel capacity of 25,384 one-pound packages of fruits and vegetables per day, freezes at minus 35 F and has storage rooms capable of holding 35 carloads of frozen foods at zero. Here are the complete technical details



To THOSE millions of American radio listeners who may have been under the mistaken impression that the principal products of Van Buren, Ark. were such characters as "Grandpa Snazzy", "Aunt Buh", and "Uncle Slug", it may be a surprise to learn that the area surrounding this enterprising community of 5200 persons is even more noted locally for such products as spinach, peaches, strawberries and other fruits and vegetables than it is as a source of imaginary relatives for radio comedian Bob Burns.

Thanks to quick-freezing, the fame of these native-grown products can

be expected to become as widespread as that of the Burns kinfolk. The Van Buren Freezing Plant, operated by a corporation headed by A. O. Dickey, president; R. J. Wilson, secretary, and T. J. Van Zandt, treasurer, has been in continuous operation since May, beginning with the early crop of strawberries, and following with blueberries, boysenberries and peaches. Seasonal crops of spinach, harvested in November and December, will finish this year's run.

Contract for the design, engineering and installation of complete refrigeration and processing equipment for the plant was handled by Air

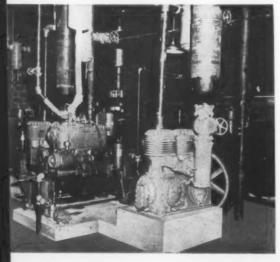
Self-7 FREEZIN

By Roge Assistant Gene Baker Ice M

Conditioning Engineering Co., Baker distributors of Ft. Smith and Oklahoma City. F. H. Towne is president of the company.

The plant, constructed within an estimated cost of \$250,000, claims the distinction of being the first and only quick-freezing plant of like capacity in America, wholly self-powered, natural gas engine driven, including auxiliary equipment and lighting. It has a tunnel capacity of 25,384 one-pound packages of fruits and vegetables per freeze, with six freezings per 24-hour period. Quick-freezing is done at —35 F. The three storage rooms capable of holding a total of 35 carloads of frozen products are held at 0 F.

Main freezing plant is designed for two quick freezing tunnels, one of which is completed; the insulated space for the second tunnel is ready for future extension to be built within the next year. The freezing tunnels are provided with 12 ft. wide entrance and delivery corridors across each end of the main tunnels. These



Here are some of the booster compressors used in the Van Buren plant. Each is driven by a Buda industrial power unit.



One of the three storage rooms in the plant, with Baker cooling unit at end of room connected to central overhead duct system. A. O. Dickey, president of the operating company, is the man standing opposite connecting door.

owered F PLANT

prague ales Manager e Co., Inc.

> spaces are separately refrigerated and provide for pre-cooling and tempering operations.

> Floor space of each tunnel is 28 ft. wide by 56 ft. long, providing for four truck lines holding 12 trucks 2'9" wide x 4'3" long x 6'0" high in each line. Each truck is capable of holding 528 one-pound cartons 5" square by 15%" thick. Capacity of each tunnel is 48 trucks, or a total of 25,384 lbs. for each tunnel loading. Entrance and delivery ends of the truck lines are provided with 3'6" x 6'0" freezer type doors for individual loading and unloading of the truck lines.

Freezing is accomplished by the direct air blast method, though the use of four model FM2500—7½ hp Baker pedestal-type blast coolers fitted with specially designed spiral fin coils and regenerative type defrosting. Each unit has a design capacity of 15.8 tons of refrigeration at —35 F room temperature with —45 F ammonia refrigerant temperature, and delivers 22,000 cfm of conditioned

air. Each unit is equipped with a No. 301 Phillips float control through a 16" x 8'0" vertical accumulator for full flooded operation. Under actual test these units produced a tunnel temperature of —52 F for a period of one week, indicating that ample reserve capacity is available under designed conditions, or that normal capacity may be frozen at lower than —35 F, thus reducing the designed freezing time.

Air delivery from the cooling unit is directed into a horizontal overhead plenum chamber, so partitioned as to separate the air flow from each unit to cover four rows of three trucks each, a total of 12 trucks, by means of directional air louvers and curtained separators, which form four individual freezing chambers within the main freezing tunnel.

Defrosting of the tunnel air blast unit coolers is accomplished by the regenerative method. The two freezing tunnels are separated by an insulated room, the side walls of which form the walls of each tunnel adjacent to the space occupied by the cooling units. The insulated end walls are equipped with passage or entrance cold storage doors, which open out into the precooling or tempering spaces.

The regenerative tank, 5 ft. wide by 15 ft. long by 28 in. deep, is set into an insulated floor pit. The defrosting water is heated by a Crane natural gas automatic heater. There is provided a 10 gpm motor-driven circulating pump, to control an even temperature of defrosting water. A second motor-driven circulating pump of 100 gpm provides direct flow of heated water to the defrosting sprays in each unit cooler.

Defrost water is returned by gravity to the heating tank, with the overflow water entering into the partitioned sump division of the tank, where another automatically controlled motor driven pump delivers

This is the compressor house with two shell and tube condensers shown; engine cooling tower and spray pond are on roof.



the waste water to an outside drain. The top of this corridor or regenerative tank room provides the main unfurred pipe tunnel for the freezers, cold storage rooms, precooling and tempering units, as well as an unobstructed central passageway between pre-cooling and storage rooms.

The three cold storage rooms, each 21 ft. wide by 100 ft. long, are located between the shipping department, located at the front of the plant, and the tempering room, which separates the freezing tunnels from the cold storage space. Each of those rooms is refrigerated by a model FM400, 11/2 hp Baker floor type cooling unit of 4 tons capacity at 0 F temperature, designed to operate on 10.8 F mean temperature difference, and deliver 4800 cfm of conditioned air, through a central overhead duct system, containing eight adjustable outlets designed to distribute 600 cfm at each outlet.

Straight-Line Storage

The unit coolers are equipped with special spiral fin-type coils with intermittent water defrosting arrangement. Each coil unit is under thermal expansion refrigerant feed, and equipped with accumulator, full-size by-pass connections, and magnetic control, for automatic operation and maintaining constant 0 F room temperature.

These storage rooms are planned for straight line movement of the frozen products, and for sectional season storage; the center room is provided with connecting cold storage doors on either side wall. Entrance and exit doors at each end of the storage rooms are equipped with double batten type vestibule doors, which permit trucking in and out of the room as required. There is also provided a roller conveyor system to minimize labor and facilitate quick loading of rooms during the rush of freezing season.

It was planned to use corkboard insulation material of conventional thickness throughout. However, the unavailability of corkboard at time of construction necessitated a change to fiber glass insulation material, and an additional thickness of this material was applied. Interior surfaces of walls and ceilings were coated with mastic, trowel finish, and then primed and painted with aluminum paint, which adds to the appearance and sanitation.

Floors of all storage rooms were laid of hard surface concrete 3 in. thick and waterproofed to withstand the heavy trucking service peculiar to quick freezing plants. Floors of the processing rooms were also given a waterproof treatment, and quick cleaning type drain traps installed, as an additional sanitary precaution.

The entire washing and processing equipment is designed for sanitation and efficient handling of products, with stainless steel material for conveyor belting, and other surfaces furnished where required.

Compressor house of steel and cement block construction is located separately from the main freezing



plant. Here will be found America's first completely self-powered quick freezing power plant of comparable size and equipment.

The main plant consists of booster compressors, secondary compressors, discharge gas inter-coolers, flash tanks, electric power generators, and gas engine drives, all arranged so that one half of the entire plant may be cut out of service, or operated independently of the other half and at different operating pressures or conditions.

The vertical condensers, oil separator, ammonia receiver, gas purger and condenser water circulating pumps are located outside of the compressor house in a space that abuts the steam generating plant now.

The roof of the compressor house forms the basin of the condenser water spray pond.

The four ammonia boosters are of the four-cylinder type, model VAF15BA—6" x 5½" Baker compressors, each equipped with a model 3050 Acme automatic oil return separator and designed to operate at 550 rpm and to produce 16.8 tons of refrigeration at -45 F suction temperature and 20 psi discharge pressure. Each booster is V-belt driven by a Buda BTH-510 industrial power unit, equipped with special slip clutch forming a complete self-powered unit, using natural gas fuel and automatic speed controlled.

The secondary compressors consist of two model 9A 6½" x 6½" Baker vertical enclosed-type ammonia compressors arranged for V-belt drive. One of these compressors is designed to operate at 327 rpm and to produce 16.95 tons at 20 lbs. suction pressure and 165 psi discharge pressure. This compressor is driven by a Buda BTH-510 power unit. The other Baker compressor is designed to operate at 340 rpm, and to produce 20.30 tons at 25 lbs. suction pressure and 165 psi discharge pressure. This compressor is driven by a Buda FRH-618 power unit.

Compressor Details

In addition to the two model 9A compressors, there are also two model 10A, 7½" x 7½" Baker vertical enclosed-type ammonia compressors, each designed to operate at 300 rpm and produce 24.8 tons at 20 lbs suction pressure and 165 psi discharge pressure. These compressors are also driven by a Buda FRH-618 power unit arranged for V-belt drive and special slip clutch.

A 31.5 kva auxiliary generator that may be V-belt driven, as occasion may arise, from the Buda power unit that normally drives one of the Model 9A compressors, is provided for stand-by service.

The two 12" x 8'0" water cooled discharge gas inter-coolers, and the two 20" x 9'3" combination liquid and discharge gas coolers or flash tanks, are divided into two separate units and mounted on structural steel supporting stands. One unit is located at each end of the compressor room, so arranged that the two near boosters have their individual auxiliary equipment. However, the booster discharge mains and headers are also arranged so that either pair of boosters may discharge into either set of Continued on page 45

REFRIGERATION INDUSTRY



SERVEL COMM'L DIV. MOVES TO NEW AND LARGER PLANT

Servel, Inc.'s commercial electric refrigeration division has moved into the plant built during the war for the company's production of wings for the AAF's Thunderbolt fighter plane.

In this windowless brick building, purchased from the Reconstruction Finance Corp., Servel has arranged its machine tools and other processing and testing equipment into an integrated, smooth flowing production line for the manufacture of commercial refrigeration condensing units.

Within this new factory complete processing

AUG. HOUSEHOLD SALES TOTAL 218,000

August shipments of domestic mechanical refrigerators declined about 1% to 218,000 units from July shipments of 222,000, and were approximately 29% below the prewar 1940-41 average monthly rate of 309,000, according to figures compiled by the Civilian Production Administra-

operation can be carried out under one roof. Raw steel, brass, copper, and castings from Servel's own foundry start at one corner of the building and emerge at the other end as a finished product, crated and ready to ship.



As part of the production process set up in the new plant of Servel, Inc.'s commercial electric refrigeration division, every Servel "Supermetic" assembly must pass a final volumetric efficiency test over one of these flometers, which measures exactly the number of cubic feet of refrigerant pumped per minute of operation. Tests for noise level, valve leakage, and current consumption are accomplished at the same time.

HEAD ILLINOIS RSES FOR '47



New officers of the Illinois Association of the Refrigeration Service Engineers Ociety pose for Irving Alter, of the Harry Alter Co., following their election. They are, left to right: R. E. Saunders, secretary; John Sackey, president; Wm. McCarley, 2nd vice president; Ralph Porter, treasurer; Floyd Lilly, vice president. Lester Sturch, sgt.-at-arms, was not present when the picture was taken.

HERE ARE PRODUCTS OFF 'PRICE' LIST

A list of the specific air conditioning and commercial refrigeration products on which price controls have been dropped is provided in Amendment 56 to SO 129, issued by OPA last month. Twelve classifications are covered, as follows:

1. Air conditioning units, self-contained, over 1 hp or 12,000 Btu, and up to but not including 25 hp.
2. Beverage cooling and dispensing equipment, including accessories.
3. Coils, high and low side, condensers, including shell and tube condensers, unit coolers, and fan coils, when designed for cooling purposes only.

designed for cooling purposes only.

4. Condensing units, over 1 hp and up to but not including 25 hp.

5. Cabinets of the follow-

ing commercial types when sold to commercial users: ice cream makers, ice cube mak-ers, and frozen food display cases having visible tops or display signs.

6. Evaporative condensers.

7. Insulated cold storage

7. Insulated cold storage doors.
8. Refrigerated coolers, cases, and boxes, including but not limited to the following types: beverage, dairy, display, dough retarders, florist boxes, milk, mortuary, reach-in, saind, utility, vegetable and fruit, walk-in wall

cases, water.

9. Counter and back bar refrigerators and display cases of all types.

10. Refrigerator compress-

SMALL MOTOR SALES UP 1 MILLION UNITS

August shipments of ac fractional horsepower motors have been estimated by the Civilian Production Administration at 1.8 million units, 1 million units above the July level.

Unfilled orders on Aug. 1 totaled 36 million units, or 3.2 million more than on July 1. The Aug. 1 backlog represents 21 months production at the August rate, which was nearly double the 1939 monthly average.

Total production could be stepped up to almost 2.5 million units a month, it is estimated, if materials were readily available.

sors, over 10 hp or 10 tons and up to but not including 25 hp or 25 tons. 11. Refrigerators over 16 cu. ft. capacity as follows: commercial, display, reach-in, walk-in. 12. Miscellaneous commer-

12. Miscellaneous commercial refrigeration equipment
and accessories, including
but not limited to the following: air conditioning or
refrigeration equipment for
automobiles, hoist cabs, trailers; air washers; back pressure switches; dryers, exchangers; filters; industrial
coolers, such as tool and insirument coolers, cutting oil
coolers, rivet coolers, etc;
injectors; receivers; relief
valves; strainers; water regulator valves.

INSTALLATION OF COOLING EQUIPMENT FORECASTS NEW ERA IN TRAIN TRAVEL

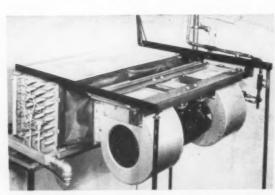
Today's travel trends are emphasized in the complete air conditioning of the first passenger coaches to be constructed since wartime for the New York Central System.

Built by Pullman-Standard Car Mfg. Co., these coaches were designed to add a maximum degree of comfort to railroad travel. The air conditioning units, produced by Frigidaire Division, General Motors Corp., are claimed to prounusually effective vide control of air temperature, humidity, and circulation under variable conditions resulting from weather and train mobility.

Each car system is complete in itself.

Generators, compressor and condenser units are suspended below the car on vibration-proof and shockabsorbing mountings. Fresh air is inducted into the system through filters and enters the conditioning unit along with filtered recirculated air from the car. The air is blown across the cooling and heating surfaces and is discharged into the length of the car, above the ceiling. Directional outlet grills distribute the conditioned air uniformly throughout the passenger compartment.

Automatic controls maintain desired temperatures with little, if any, attention. A unique feature of the Frigidaire system is the modulation arrangement. When temperatures within the coach have been reduced to the proper level, the compressor and condensing unit continue to operate at reduced speed instead of cutting out completely.



Two centrifugal type fans powered by a 1-hp motor, a cooling unit, a heating unit, and controls make up the air conditioning unit proper. It is installed above the ceiling at one end of the coach. The fan assembly is completely isolated from the rest of the unit by rubber cushions and flexible ducts.



Compressor unit for the train conditioning system is comprised of two parts: the compressor (left) and a 12-hp direct current electric motor. The unit is suspended with rubber to afford shock reduction, and is easily accessible for service.

GLASS PLANT BUILT BY ADVANCED FIRM

Like working in a green-house will be working in the new plant now under construction at Eddington, Pa., by Advanced Aircraft, Inc., which will use the plant for the manufacture of a variety of products including a new line of refrigeration compressors.

Reason for the use of glass as a construction material, even in the roof, is to provide maximum visibility for workers performing the close-tolerance machine tool work essential to the company's operations.

Some of the machinery used in this new plant is being made by the company itself. For example, one of the new machines will complete a crank case or cylinder block for a refrigeration compressor in 2½ minutes, automatically.

Fred Germer is president of Advanced Aircraft, Inc., and E. S. Lape is sales manager. E. D. Dunning, for the past 26 years an engineer and designer of compressors, heads the engineering staff.

BALSA INSULATION NOW AVAILABLE

Balsa Ecuador Lumber Corp., which controls the world supply of Balsa Wood, has announced the availability of this material for insulation purposes.

During the war the government purchased great quantities of Balsa Wood, which has been used for years in special refrigeration applications, for insulation purposes. The producers are now set up to actively supply this material for general insulation usage.

According to John W. Mannix, vice president of the company, kiln dried Balsa Wood has the same thermal conductivity as corkboard, with greatly superior structural strength.

Balsa Wood panels are now prepared primarily in thicknesses of 2, 2½, and 3 inches, with smaller quantities available in thicknesses of 1, 1½, and 3½ inches. Widths are 12 inches, or wider if preferred. Lengths are 36 inches or longer.

PRICING PROCEDURES AMENDED BY OPA

Procedures for obtaining price adjustments under the product pricing amendment (Section 6) of the Price Control Extension Act of 1946 ar contained in a supplementary order issued following discussions with industry representatives.

These procedures set forth the method and explain the rules governing the preparation, filing, and processing of applications for price increases under this section of the price control act.

Section 6 of the act, referred to as the "product pricing amendment," provides that upon application by the appropriate industry advisory committee, maximum prices may be increased when they fail to cover the 1940 average price of a product plus the industry-wide average cost increase since then.

NEW STANDARDS SET FOR SMALL MOTORS

A broad new program of standardization for fractional horsepower motors, designed to reduce production costs, insure efficiency and proper application in use, and result in long term savings to customers, was announced today by members of the Motor and Generator Section of the National Electrical Manufacturers Association.

The new standards provide specific definitions of motor rating and performance in coordinated terms horsepower rating, speed, breakdown torque, and service factor. In formulating the new standards, the motor manufacturers felt that a clearly defined and generally accepted method of evaluating motor performance was essential in order to assure intelligent design, manufacture, and use of small power motors.

The fundamental points covered in the standards include not only this new basis of rating but also previously standardized locked rotor or starting currents of motors. It was emphasized that this was but the first phase in the new program of standardization.

UNITARY EQUIPMENT SALES FIGURES

SHIPMENTS OF UNITARY EQUIPMENT: SUMMARY BY CLASS OF PRODUCT JULY-DECEMBER, 1945

| | Shipments of Complete Units | | | | | | | Shipments of | |
|---|-----------------------------|----------------------------|-------------------------|----------------------------|--------------|--------------------|--------------------|---------------------|--|
| Product | Total | | Self-contained Units | | Remote Units | | Enclosures Only | | |
| | Number | Value (dollars) | Number | Value (dollars) | Number | Value (dollars) | Number | Value (dollars) | |
| Total | ***** | 36,382,838 | 103,875 | 27,819,320 | | 8,563,518 | 30,945 | 6,807,995 | |
| Total, Except Absorption Systems | 118,217 | 35,367,792 | 103,875 | 27,819,320 | 14,342 | 7.548,472 | 30,945 | 6,807,995 | |
| Walk-in coolers | 3,800 | 3.556,099 | 712 | 1,016,317 | 3,088 | 2,539,782 | 3.247 | 3,122,005 | |
| Reach-in refrigerators | 18.787 | 6,378,656 | 15,740 | 5,032,700 | 3.047 | 1,345,956 | 2,854 | 671,373 | |
| Beverage cooling and dispensing | | -,, | | -,, | -, | .,, | 2,001 | 011,313 | |
| equipment | 4,745 | 1,027,015 | 3 | 1 | 1 | 1 | 4.774 | 379,341 | |
| Display cases | 5,666 | 3,107,769 | 922 | 397,758 | 4,744 | 2,710,011 | 1.802 | 817,706 | |
| Soda fountain equipment and ice cream | | | | | | | , | , | |
| Soda fountain equipment | 5,177 1,101 | 1,998,578 640,143 | 953 | 590,231 | 148 | 49,912 | 2167 | ² 48,208 | |
| cabinets, and counter freezers | 4,076 | 1,358,435 | 3 | 1 | 2 | 1 | 107 | -40,200 | |
| Frozen food cabinets | 5.796 | 1,500,475 | 5.678 | 1,457,576 | 118 | 42,899 | 742 | 155,101 | |
| Farm and dairy milk coolers, mechanical ³ | 20,306 | 2.833.603 | 18,791 | 2,700,539 | 1,515 | 133,064 | 4654 | 455,911 | |
| Drinking water coolers, mechanical and non-mechanical | 42,099 | 5,386,920 | 41,798 | 5,346,305 | 301 | 40,615 | 2,133 | 137,069 | |
| Laboratory and industrial freezing | | | | | | | | | |
| equipment ⁵ | 191 | 111,047 | 1 | 1 | 1 | 1 | 2 | 2 | |
| Ice making machines | 1,135 | 1,705,928 | 1 | 1 | 1 | 1 | 2 | 1 | |
| Air conditioning units ⁶ | 10,515 9,850 | 7,761,702 7,589,313 | 10,515 9,850 | 7,761,702 7,589,313 | | | | ****** | |
| Room type | 665 | 172,389 | 665 | 172.389 | | | | ****** | |
| Absorption systems ⁶ | | 1,015,046 | | | | 1,015,046 | ***** | | |
| Cold storage doors | ***** | | | | | | 13,297 | 1,186,278 | |

¹Data for self-contained and remote units are not shown separately in order to avoid disclosure of operations of individual companies.

SHIPMENTS OF COMPONENTS AND ACCESSORIES FOR UNITARY EQUIPMENT AND PURCHASES OF COMPONENTS: SUMMARY BY CLASS OF PRODUCT SHIPPED, JULY-DECEMBER, 1945

| | Shipments of Complete Units | | | | | | Purchases of Complete Units and Components | | | |
|---|-------------------------------------|--|-------------------------------------|--|-----------------------------|--|--|---------------------------------|---------------------------|--|
| Product | Total | | Domestic 1 | | Export ² | | Compressors | | | |
| | Number | Value (dollars) | Number | Value (dollars) | Number | Value (dollars) | Complete Units (number) | Compressor Units (number) | Condensers (number) | Total Value (dollars) |
| TOTAL | | 40,331,825 | | 38,091,571 | _ | 2,240,254 | | | | 1,261,209 |
| Condensing units | 222,901 | 19,963,353 | 213,399 | 18,681,021 | 9,502 | 1,282,332 | 6,853 | 7,326 | 15,291 | 936,812 |
| Ammonía refrigerants Refrigerants except ammonia Air cooled Water cooled. | 820 222,081 206,851 15,230 | 951,871 19,011,482 12,888,128 6,123,354 | 728 212,671 198,424 14,247 | 849,974 17,831,047 12,220,119 5,610,928 | 92 9,410 8,427 983 | 101,897 1,180,435 668,009 512,426 | 6,853 5,776 1,077 | 7,326 6,679 647 | 15,291 14,080 1,211 | 936,812 623,185 313,627 |
| Compressors and compressor units Ammonia refrigerants Refrigerants except ammonia | 1,988 | 5,880,390 3,261,573 2,618,817 | 54,398 1,781 52,617 | 5,411,859 2,855,790 2,556,069 | 1,066 207 859 | 468,531 405,783 62,748 | 141 6 135 | **** | * * * * | 25,103 10,693 14,410 |
| Centrifugal refrigeration machines | 151 | 2,292,873 | 147 | 2,231,193 | 4 | 61,680 | | | | |
| Heat exchanger equipment. Evaporative condensers. Unit coolers. Air conditioning. Refrigeration | 51,647 2,133 | 12,195,209 1,758,386 6,085,612 1,162,024 4,923,588 | 1,717 49,666 2,069 47,597 | 11,767,498 1,711,193 5,856,454 1,130,296 4,726,158 | 58 1,981 64 1,917 | 427,711 47,193 229,158 31,728 197,430 | 34 659 41 618 | | | 291,968 48,560 150,305 7,928 142,375 |
| Other heat exchanger equipment 3 | | 4,351,211 | ***** | 4,199,851 | | 151,360 | 547 | **** | **** | 93,105 |

¹ Continental United States

²Included only in totals to avoid disclosure of operations of individual companies.

Preliminary figures for shipments of farm milk coolers were published in the "Facts for Industry" on Farm Machines and Equipment: 1945, Series M35A-05, released September 3, 1946. The data on farm and dairy milk coolers, mechanical, presented here are revised to include a few reports received after tabulation of the reports on Farm Machines and Equipment.

Includes immersion type only. Data for tubular or surface type appear only in totals to avoid disclosure of operations of individual companies.

⁵ Includes blood plasma cabinets, instrument treating cabinets, rivet coolers, and cutting tool coolers (collar). No data were reported for cutting tool coolers (collar).

^{**}Obata were requested separately for domestic and export shipments of the following items:

Air conditioning units, store type—domestic shipments, 5,882 units, \$5,626,655; export shipments, 968 units, \$1,026,658.

Air conditioning units, room type—domestic shipments, 192 units, \$25,711; export shipments, 473 units, \$146,678.

Absorption systems-domestic shipments, \$861,997; export shipments, \$153,049.

^a Includes Canada, Mexico, and United States territories.
^a Includes Canada, Mexico, and United States territories.
^a Includes condensers and liquid coolers of shell and tube and shell and coil types, fin coils (heating and cooling), and plate evaporators.

HERE'S WHAT YOU MISSED . . .



REFRIGERATOR PARTS CEILING UP 3.5%

The 3.5% ceiling price increase granted to manufacturers of household mechanical refrigerators has

also been applied by OPA to refrigerator repair and replacement parts. This action was based on the same cost data upon which the price agency has based the increase on the finished product prices.

N. Y. JOBBERS VOTE SATURDAY CLOSING

Members of the Metropolitan Refrigeration Air Conditioning Jobbers Association have voted to continue Saturday closing, initiated on June 15 of this year, as a year around policy.

The group also has voted to retain the services of a professional credit reporting agency to permit member wholesalers quick and automatic exchange of credit and delinquent account information.

MRAC members who are cooperating in the Saturday closing are:

Aetna Supply Co., New York City; Harry Alter Co., New York City; M. Blazer & Son, Passaic, N. J.; Capson Co. Inc., Brooklyn; Central Service Supply Co., Syracuse, N. Y.; Coleman Electrical Supply Co., Brooklyn.

County Seat Supply Co., Inc., White Plains, N. Y.; County Supply, Inc., Norwalk, Conn.; Excel Refrigeration Supplies, Inc., Brooklyn; Fidelco Industries, Inc., New York City; W. I. Freeman & Co., Inc., Newark, N. J.; Abe Gruber & Co., Elizabeth, N. J.

Albert Hofeld, Inc., New York City; Melchior, Armstrong, Dessau Co., Inc., Ridgefield, N. J.; Paramount Electrical Supply Co., Inc., New York City; Tesco Distributors, Newark, N. J.; Wallwork Brothers, Inc., Newark, N. J.; Wholesale Distributors, Inc., Jamaica, N. Y.

BAKER BUYS PLANT IN PORTLAND, ME.

Purchase of an additional manufacturing plant at Portland, Me. has been announced by Baker Ice Machine Co., Inc. This factory adds 60,000 square feet to the company's manufacturing facilities, and when in production will be second in output to the Baker's Omaha plant.

Formerly used for war production, the new plant will be set in operation just as soon as the necessary machine tool equipment can be installed.



1311 WEST SOTH STREET

CLEVELAND 2, OHIO

WAGNER Repulsion-Start Induction Motors Are Long-Lived, Economical, and Dependable

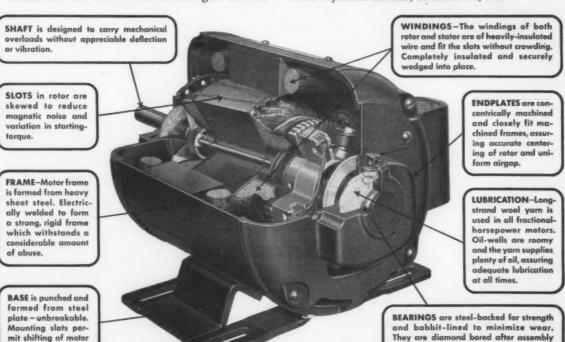
Wagner type RA repulsion-start induction motors give years of reliable, trouble-free service, because dependability is built into every motor.

Careful engineering has reduced wear, vibration, and noise of operation to a minimum. Many important construction features such as sturdy welded steel frames and well-insulated windings securely held in place, add to the ruggedness of the motors without sacrificing compactness or efficiency.

Wagner type RA motors embody all the important improvements in single-phase motor design. This means that the user of RA motors gets the best motors for the job with long life and dependability built into every part.

Type RA motors are available in 1/8 to 15 hp; sleeve or ball-bearing; horizontal or vertical; open, dripproof, and totally enclosed; rigid, resilient, or flange mountings.

A few of the many Wagner construction features are shown below around a cut-away view of the type RA. For complete description of Type RA motors, write for Bulletin MU-185, and address your inquiry to Wagner Electric Corporation, 6442 Plymouth Avenue, St. Louis 14, Mo.



Consult Wagner Engineers on all Electric Motor Problems

Electric Motors - Air **Brakes - Brake Lining** Hydraulic Brakes

mit shifting of motor

for belt tightening.



Transformers - Industrial Braking Systems NoRol - Tachograph

in endplates and have a mirror-like finish.







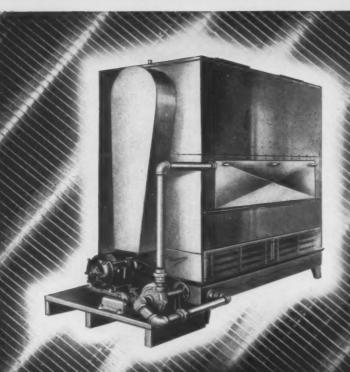








Sales and Service Branches: ATLANTA 3 - BALTIMORE 18 - BOSTON 15 - BUFFALO 8 - CHICAGO 16 - CINCINNATI 10 - CLEVELAND 15 - DALLAS 1 - DENVER 2 - DETROIT 2 HOUSTON 2 - INDIANAPOLIS 4 - KANSAS CITY 8 - LOS ANGELES 15 - MEMPHIS 3 - MILWAUKEE 2 - MINNEAPOLIS 4 - NEW YORK 7 - OMAHA 2 - PHILADELPHIA 8 - PITTS-BURGH 13 - PORTLAND 9 - ST. LOUIS 3 - SALT LAKE CITY 1 - SAN FRANCISCO 3 - SEATTLE 4 - SYRACUSE 2 - TULSA 3 - WASHINGTON 5 - In Canada: WAGNER ELECTRIC AT LEASIDE, ONTARIO -- Wagner motor parts are available at 350 Wagner-owned and -contract repair shaps



New!

COOLING TOWERS BY MARLO

Triple-type

Induced Air Wetted Surface Water Spray

- Compact in space, weight, and price
- Outdoor—Indoor
 3 to 50 Tons—Built sectionally

Write for Bulletin 406

MARLO HEAT TRANSFER SURFACE

Ball-Bonded Blast Coils — Cooling and Heating • Air Conditioning and Refrigeration Apparatus • Industrial Blower Units • Unit Coolers Evaporative Condensers and Coolers • Low Temperature Apparatus

See our new line in Cleveland

MARLO HEATTRANSFER

MARLO COIL COMPANY

ST. LOUIS 10, MISSOURI

SELF-POWERED PLANT . . . Continued from page 38

auxiliary equipment, thus assuring at least 50% of the plant's capacity being available at all times, in case of failure or repairs to any one piece of booster equipment.

Likewise all four secondary stage compressors are equipped with full by-pass and cross-over connections, so that any one compressor may operate independently, on medium temperature suction line from main plant, or on the low temperature suction main as may be desired. This feature likewise assures at least three-fourths of the second stage compressors available for any load service at all times, should one of the main compressors or power units be cut out of service, or under service repair.

The condensing equipment consists of two $40'' \times 16'0''$ Baker vertical shell-and-tube condensers, each containing 170 two-inch tubes, and provided for not less than 1423 sq. ft. of effective surface, or a total of 2846 sq. ft. of condensing surface. Here again full plant operation is assured during any shut-down or cleaning period of either condenser. The motor-driven condenser water circulating pumps of 300 gpm each, located at base of condensers, circulate the cooling water to the open spray pond on top of compressor house, and the return is by gravity to the condensers. There is also provided an electrically operated sump pump to discharge the over-flow water into the central drain system.

The ammonia receiver, 30" x 14'0", mounted on concrete saddles, provides ample reserve storage capacity for maximum load demands. The 2 in. main liquid line enters the compressor house from above floor level where two 1½" liquid mains branch off to each of the two ammonia liquid precoolers, from where these lines go directly to the plant cooling equipment.

The ammonia gas oil separator 24" x 60", equipped with especially designed baffles, assures maximum oil separation, thereby preventing any oil logging of evaporator coils or auxiliary equipment. A "Rex" automatic foul gas purger is installed and connected to condenser, oil separator and ammonia receiver to insure ex-



... and I got the best wrapping materials from my HOME FREEZER DEALER. He sold me a **ZERO-O-KIT** Why don't you see him...

WILL THE WOMAN WHO BUYS YOUR FREEZER Recommend YOU?

DEALERS, everywhere, are gaining NEW CUSTOMERS by selling the ZER-O-KIT with each Freezer...

UNLESS your customers know how to properly package frozen foods—you've got troubles, Mr. Dealer! Keep them happy and keep them sold—and they will tell others about you.

AND they will do just that, if you sell them the ZER-O-KIT! It contains everything needed for frozen food packaging — plus complete information on the use of each material. Furthermore, each ZER-O-KIT sale means additional profit for you!



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If you are an appliance dealer, contact your distributor for further information. Distributors—contact us for we have interesting information for you.

Yorkville PAPER CO., INC.

431 East 77th Street, New York 21, N. Y.

traction of non-condensible gases from the compression system. This equipment is located conveniently in the condenser house.

The suction mains, one 6-in. low temperature line, and one 4-in. medium temperature line, from the refrigerated spaces in main plant are carried to the compressor house on steel supporting stands. The main low temperature line is provided with 6 ft. drop leg, which forms an efficient liquid trap. From the bottom part of this trap a 4-in. auxiliary main connects to the cross-over header in the

compressor house, arranged so that any one of the secondary compressors may be operated directly on the low temperature load, thus by-passing the booster compressors whenever desired. This feature permits flexibility of operation, and also provides for normal zero degree temperatures, without the necessity of operating the booster compressors or auxiliary equipment, should the quick freezing tunnels be used as additional cold storage space at the end of the season's run.

All frosted ammonia lines have

hairfelt covering for water-proof protection. All other pipe lines and fittings are coated with anti-rust proof protection, and painted the conventional color scheme.

In addition to the compressor and auxiliary equipment installed in the compressor house, there is also installed a model PC-1879 Buda industrial power unit direct connected to a General Electric generator 125 kva, 220 volt, 3 phase, 60 cycle, 4 wire, operating at 900 rpm. This unit supplies electric power for all of the plant motor-driven equipment and lighting. The auxiliary generator previously mentioned is an Electric Machinery Co. 31.5 kva generator, and has sufficient capacity to operate the plant equipment at half capacity, as an additional protection against complete shut-down should the main generator be out of service or under repair. No outside electric power service is connected to the main electric distributing panel. As a safety measure, however, a 110 volt auxiliary lighting line connected to the O. G. & E. service is provided, so that in case of a complete breakdown of the plant's electric service, lighting will be available to facilitate repair work.



AMINCO Snap Action Valves For Multiple Temperature



Used with systems having more than one coil, operates from same compressor. . . . Adjustable from 20" of vacuum to 63 lbs. pressure. . . Differential 7 lbs. min. to 29 lbs. max. . . Free from bellows strain. . . Used with any refrigerant except ammonia. . . For flooded as well as dry gas types or any combination. . . A proven performer.

AMERICAN INJECTOR CO.

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Van D. Clothier, 1015 E. 10th, Los Angeles
G. I. Boone, Rm. 739, 1775 Broadway, N. Y.
J. C. Battles; 504 Bondl Bidg., Galosbury, III.
W. H. Cody, Santa Fe Bidg., Dalins, Texas
Expert: Borg-Warber, 310 &8, Mich., Chicago

COMFORT COOLING . . .

Continued from page 28

loads of the fresh air brought directly to the cooling unit. The formula for calculating the *total* heat load due to outdoor air was given previously (Formula III) as

(Heat Content-Outdoor Air)

Btu/Hr. = cfm x 60 x (Heat Content—Indoor Air)

Specific Volume of Air

The formula for determining the sensible heat load of the outdoor air (Formula IV) is

(Outdoor DB Temp.)
minus
Btu/Hr.=cfm x 60 x (Indoor DB Temp.) x .24
Specific Volume of Air

Based on standard air with a specific volume of 13.34 cu. ft. per pound, on which ratings of air handling equipment is based, these formulas may be simplified by the use of the factors 4.5 and 1.08 respectively. The factor 4.5 in Item 1 is used to convert cfm into pounds per hour, and represents the number of minutes per hour (60) divided by the specific volume of standard air (13.34 cu. ft. per pound). The factor 1.08 in Item 2 represents the product of the spe-



Vast Home Locker Field Open to Tyler Agents

Of great importance in the new Tyler program is the fact that Tyler agents now have two complete lines —the complete, out-in-front, alwaysimproving Tyler welded steel commercial line, and the growing Tyler Harder-Freez Home Locker line.

Aggressive national advertising is publicizing the Tyler name and Tyler products. Sub-Agencies are available. Write Tyler Fixture Corporation, Dept. RI-11, Niles, Michigan.



cific heat of air (.24 Btu per pound per degree F) multiplied by the number of minutes per hour (60), divided by the specific volume of air (13.34 cu. ft. per pound).

Item 1 gives the total heat load of the outdoor air. Item 2 gives the sensible heat load of the outdoor air. Naturally, the difference between the total heat load and the sensible heat load will give the latent heat load of the outdoor air, as shown in Item 3.

The total sensible and latent heat loads are obtained by adding the apparatus outdoor air loads to the room loads. The total heat load, of course, is the sum of the total sensible and total latent heat loads.

FACTORS NOT CONSIDERED IN HEAT LOAD CALCULATIONS: There are several sources of heat gain which we have neglected to consider. The two most important of these are as follows:

- (1) Fan motor load.
- (2) Duct losses.

The horsepower of the fan motor is converted into heat which warms the air supply whether or not the motor



No Heating No Fires No Hazards

Both owners and contractors lose more than insurance covers, if fire breaks out on an insulation job. Months of building usage are lost—critical materials wasted.

LAYKOLD Insulation Adhesive is asphalt formulated for cold use. It contains no inflammable solvents and will not ignite. It holds vapor-seal membranes and insulation materials to any type of surface. Combined with aluminous cement, it adheres to damp walls or floors where other adhesives won't stick. LAYKOLD Insulation Adhesive is easily applied by spray, brush, squeegee or trowel. It sets to a film—tacky and ductile rather than brittle—which is self-healing around nails, skewers, seams, joints and cracks. With a final troweling of LAYKOLD Weathercoat, insulation is fully sealed and permanently moisture proof.

Cover the floor with LAYKOLD Mastic—impervious, easy-to-clean, enduring, waterproof and noiseless—no better refrigeration job can be built.

Play safe with Laykold Products—no fires, no fumes, no stench, no odors.

Specifications and prices on request.

Pag. U. S. Pat. Off.

AMERICAN BITUMULS COMPANY

200 BUSH STREET + SAN FRANCISCO 4, CALIF.
E. PROVIDENCE, R. I. - BALTIMORE, MO. - COLUMBUS, ONIO - ST. LOUIS, MO. - BATON ROUGE, LA.
TUCSON, ARIZ. - LOS ANGELES, CAL. - OAKLAND, CAL. + SEATTLE, WASH. - SAN JUAN, PORTO MICU

itself is in the air stream. The fan is always in the air stream, and the work done on the air stream by the fan is converted into heat. If the fan is on the leaving side of the cooling unit, as is usually the case, the heat becomes part of the room sensible heat gain and results in a larger volume of supply air being necessary. No matter what side of the unit the fan is on, however, the heat which it expends becomes a part of the total load which must be counteracted by the refrigeration equipment.

In the problem under considera-

tion, a fan motor of approximately 1/2 hp will be necessary. A motor of this size gives off about 1,500 Btu of heat per hour, which is less than 2% of the room sensible heat load, and may be neglected without introducing a serious error. In larger installations, of course, the motor load becomes significant, and should be included in the calculations.

Whenever a duct goes through a non-cooled space en route to a cooled space, it is subject to losses both from the heat gained by conduction and radiation, and the air lost through the seams of the duct. Insulation around the duct will minimize the former source of loss, while good workmanship will help eradicate the latter source. In the problem under consideration, it is not contemplated that there will be any ducts going through non-cooled spaces, so this form of heat gain is not a factor. On installations where there are long runs through non-cooled spaces, however, duct losses become significant.

DEEPFREEZE SALES CONFERENCE SET

National Sales Convention for Deepfreeze distributors will be held Nov. 14 and 15 at the Drake Hotel. Chicago, F. F. Duggan, general sales manager, has announced. Distributors from every state will be presented new Deepfreeze merchandising and sales promotion plans.

Besides Mr. Duggan, those participating include "Rock" Smith, vice president and general manager; R. V. Newbell, advertising manager; S. J. Seibert, manager product service de-partment; H. W. Whitmore, chief engineer; and J. Baker, factory man-





CHICAGO SEAL CO. 20 N. WACKER DR., CHICAGO 6, ILL



WITH GRUNOW CARRENE METERS

It is false economy 4 out of 5 times to install an ordinary dehydrator. Genuine Grunow Meters have built-in dehydrator cans. Single seal of brazed phosphorous copper. Entire meter flow-tested. 50,000 in past five years. Satisfy your customers on the first call and have extra time for increased service profits!

Write for Information on New Discounts.

AUTHORIZED SERVICE, INC.

CONTRACTORS



This photo was taken at the recent organizational meeting of the Ohio Valley Association of Refrigeration Contractors. In the front row, left to right, are: F. P. DiCesare, vice president; A. D. Dienstel, secretary; E. S. Wright, National Association of Refrigeration Contractors; Hymie Robinson, M. S. Chapman, treasurer, and D. A. Evans. Back Row, left to right: Clyde Sarver, president; Robert Quinn, attorney; Mitchell Walulik, Carrol Albus, Ed Walulik, and W. A. Carlisle.

CONTRACTOR FIRMS IN OHIO VALLEY ORGANIZE

The Ohio Valley Association of Refrigeration Contractors was organized at a recent meeting in Steubenville, Ohio. Officers elected were: Clyde Sarver, president; F. P. DiCesare, vice president; A. G. Dienstel, secretary and M. S. Chapman, treasurer.

E. S. Wright of the National Association of Refrigeration Contractors was the speaker at the initial meeting, and aided the organizational work.

The association will draw members from Steubenville, Bridgeport, East Liverpool, Follansbee, Toronto, Wordman and Wheeling.

Mr. Sarver, who has been in the refrigeration contracting business 33 years, told members at the organizational meeting that for the past 10 years he has hoped that contractors would get together and organize, in their own interest, on both a local and a national basis.

ZOPPEL HEADS NARC TRADE RELATIONS UNIT

F. J. Zoppel, president of the Columbus (Ohio) Refrigeration Co., has been appointed chairman of the trade relations committee of the National Association of Refrigeration Contractors, an announcement from NARC headquarters in Cleveland states. Mr. Zoppel also is president of the Central Ohio Association of Refrigeration Contractors.

Serving with Mr. Zoppel on this committee are: W. W. Allison, president of the California Association of Refrigeration Service Engineers; Charles H. Merrill, of Holbrook Merrill Co., San Francisco; Raymond M. Shock, executive secretary of the Refrigeration Contractors Association of Detroit; and Theodore A. Reina, president of the Refrigeration and Air Conditioning Guild, New York City.

The committee's principal function is to cooperate with other groups in the refrigeration industry to assure and maintain fair and sound business practices. It is now engaged in a survey to ascertain the present status of industry trade relations as they affect refrigeration contractors.

CLAIM UNFAIR PRACTICES BY DAIRY INTERESTS

A complaint against certain practices of dairy and ice cream companies has been filed with the Federal Trade Commission by the Refrigera-



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AUDELS REFRIGERATION & AIR CONDITIONING GUIDE Answers Your Questions on Basic
Principles, Servicing, Operation and Repair of
Household Refrigeration—Special Refrigeration
Units—Commercial and Industrial Refrigeration
—Air Conditioning Systems—Over 1280 Pages,
46 Chapters, 700 Illustrations—Diagrams including data on Freen, Quick Freezing, Lockers and
Water Coolers. A new timely book containing
practical facts and figures for Better Service.
Easy to understand and Handy Ready Reference.
Step up your own skill with the facts and figures of
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tion Contractors Association of Northern California, San Francisco.

The complaint cites the practice of those companies to give away, lease, consign, or sell refrigeration equipment at ridiculously low prices to get and hold the dairy and ice cream business of their customers; all of which, it is claimed, are unfair methods of competition, in violation of certain laws.

In a letter to the FTC in support of the Northern California association's claim, National Association of Refrigeration Contractors headquarters has asserted that the practices complained of by its affiliate are by no means confined to the northern California area, but exist in many other cities.

STATE LICENSE TOPS CITY'S, COURT RULES

The authority of a municipality to require a local license in cases where statutes provide for a state license has been nullified in California by the refusal of the state supreme court to review an appellate court ruling that municipalities possess no such authority.

Although the case in question con-

cerned an electrical dealer who challenged the validity of the Fresno (Calif.) licensing law, refrigeration men in the state are hailing the court ruling as a release from restrictive city licenses.

Trade associations are advising their members who hold state licenses that they are no longer bound to take city examinations. However, they are instructed to continue paying their local license fees unless they become discriminatory or excessive.

NEW CONTRACTOR IN OAKLAND, CALIF. AREA

Aetna Refrigeration & Air Conditioning Co. has moved from Berkley, Calif. to 4238 Broadway, Oakland, Calif., according to John Jeffrey owner. The company has acquired the Chrysler Airtemp franchise for Alameda and Contra Costa counties.

ANGUS CONTROLS TEXAS REFRIGERATION FIRM

The Texas Refrigeration & Engineering Co. of Dallas now is owned entirely by Frank Angus, who went to Texas to engage in the locker plant contracting business early in 1945. Mr. Angus has been associated with the locker plant business since 1937, when he designed and built some of the first plants in Kansas and Missouri.

NEW FIRM OPENS IN FORT SMITH, ARK.

The Fort Smith Refrigeration Co., Inc., has been incorporated in Fort Smith, Ark., with \$10,000 capital stock of which \$6,600 has been paid in. H. R. Watkins of Springdale as resident agent and Sam Poulos and William Watkins, both of Fort Smith, are incorporators.

THE allegedly appliance-starved public may be itching to get their hands on new refrigerators, ranges, and similar household items, but they're not so anxious that they'll leap at the chance to buy the first ones they see. At least that's the attitude revealed by a recent survey by the Bureau of Radio and Electrical Appliances of San Diego County, Calif.

ty, Calif.

Results of this survey indicated that 34.2% of the families comprising San Diego's 430,000 population plan early purchases of electric appliances, BUT—and here's the surprising thing—only 17.4% of those intending to make original purchases said they would buy the first make available on the market. The other 80.4% stood solidly on a determination to wait until conditions permitted a choice of make, model, and features.

NEW OKLAHOMA FIRM

R. W. Hayes, H. D. Bradford and H. W. Goggin, all of Oklahoma City, have formed Refrigeration Engineering Co., Inc.

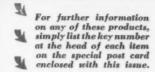
'Gemco' Compressor Execs



Officers and executives of General Engineering & Mfg. Co., St. Louis machine tool manufacturer which has entered the refrigeration compressor field with its "Gemco" model, pose for a formal portrait. Seated, left to right, are: W. A. Schreiber, vice president and assistant general manager; J. H. Schreiber, president and general manager; W. R. Vogel, vice president. Standing, left to right, are: A. Huhn, test engineer; R. L. Diehl, sales and advertising manager; E. Gygax, chief engineer.







Frozen Food Display • P-147

Product: Illuminated super-structure (Model SS 64) for frozen food promotion,

Manufacturer: Jordon Refrigerator Co., Philadelphia.



Features: Intended for use in self-service frozen food departments, this super-structure is a separate piece of equipment which can be attached to a frozen food case or used separately in other store or window displays. Finished in white enamel it is equipped with fluorescent lighting and a full length mirror to reflect contents of the case.

Sealing Nut • • • P-148

Product: Mounting and sealing

Manufacturer: Radio Frequency Laboratories, Inc., Boonton, N. J.

Features: Designed especially for protecting equipment used in the presence of dusts and corrosive fumes. Elastic sleeve tightly grips protruding shaft or switch handle. Base of nut is sealed to the panel by an internal rubber ring which permits metal-tometal contact between nut and panel,

insuring solid mounting. Can readily be substituted for standard mounting nuts now in service.

Air Conditioner • • • P-149

Product: "Comfortaire" conditioner, a new type of air conditioning unit which has been granted a basic patent (No. 2,405,812).



Manufacturer: American Coils Co., Newark, N. J.

Features: With emphasis on dehumidification of air, this unit removes moisture from air without over cooling. Self-adjusting, this new unit permits more cooling on hot, dry days and more removal of moisture on cool, humid days. Operating principle is the physical law that vapor presequalize themselves, through this principle it controls latent as well as sensible heat. The conditioner uses a smaller condensing unit, as it is not necessary to lower air to dew point to effect moisture removal. Unit is available in two floor models designed for homes, shops, and other applications.

New Insulation • • P-150

Product: "Styrofoam" insulation for low temperature applications.



Manufacturer: Dow Chemical Co.,



Midland, Mich.

Features: Material consists of "Styron" (polystyrene) expanded 40 times to create a multicellular mass of foamlike material with low thermal conductivity, good structural strength, and high moisture resistance. Lightest of all known insulation materials in solid form. Easy to work with, it can be cut or sawed with ordinary woodworking tools, which enables it to be fitted into recesses or around projections as well as on flat surfaces. It adheres well, can take plaster directly, and will hold skewers.

Steel Insulation • • P-151

Product: Ferro-Therm steel reflective insulation.

Manufacturer: American Flange & Mfg. Co., Inc., New York City.

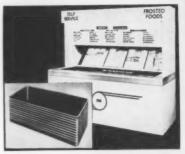
Features: Available to general public after wartime uses in altitude chambers, all-weather rooms, etc., applications from minus 125 F to plus 165 F. Reflects 90 to 95% of radiant heat; vermin proof; fire resistant; does not absorb moisture or odors; odorless. 'Available in 38 gauge for building use, in heavier gauges for refrigeration applications.

Sheets coated in non-corrosive alloy of tin and lead, hot-dipped in palm oil.

Frozen Food Cabinets • P-152

Product: A new line of self-service frosted food cabinets, available in center-aisle and wall-type models.

Manufacturer: Paley Mfg. Corp., Brooklyn, N. Y.



Features: Cabinet liners used for cooling are specially fabricated Kold Hold plate-type evaporators. Each cabinet has 20-cu. ft. capacity. Refrigerant may be either methyl chloride or Freon. Partitions of 16-gauge steel can be inserted. Overall dimen-



Yes . . . more than nine out of ten who wisely buy by brand name ask for Davison Refrigeration Grade Silica Gel. This amazing vote of confidence was revealed in a recent unbiased coast-to-coast survey of refrigeration service engineers.

Find out for yourself why Davison's merits "The 91% Choice." Order Davison Refrigeration Grade Silica Gel in bulk . . . or in factory-charged dehydrators from your jobber.

The Davison Chemical Corporation

Progress through Chemistry

BALTIMORE-3, MD.

Canadian exclusive sales agents for DAVISON SILICA GEL:

CANADIAN INDUSTRIES LIMITED, General Chemicals Division



sions of wall cabinet are: length, 84 inches; width, 33 inches; heighft, 75 inches. Aisle cabinet is 62 inches high. Superstructure is removable for ship-

Stainless Beer Coils • P-153

Product: Stainless steel beer coils used in a new model draught beer

Manufacturer: Temprite Products Corp., Detroit.



Features: Beer does not become clouded on contact with stainless



Spot it immediately with

VISOLEAK detects even the smallest leaks before they cause damage to expensive refrigeration systems. of use prove it safe, economical, easy

NEW CHARGING SET

The VISOLEAK Charging Set was developed to inject VISOLEAK, add refrigerant oil or re-charge sealed units. For use on all types of refrigeration systems without danger of introducing air or foreign matter.

Charging Set— complete with hoses......\$7.50 Filler only-without hoses.... 6.00 See your refrigeration supply jobber or write for complete information.

1701 WEST SLAUSON, LOS ANGELES 44, CALIF

steel, so draws clear from first day of use. Possessing a high degree of tensile strength, stainless steel also presents a uniformly smooth surface and is virtually non-porous, and is thereby easy to keep clean. Operating on a principle of direct heat transfer, the unit is equipped with an internal lowside float valve refrigerant feed and a constant-pressure temperature control valve. Cooler will draw up to three different brands of beer plus sweet water and soda water, all cooled at the same time. Two models are avail-

Speed Nuts • • • P-154

Product: C7000 Series of heattreated spring steel speed nuts.

Manufacturer: Tinnerman Products, Inc., Cleveland.

Features: Compact, withstand higher torque tightening, provide greater tensile strength. Available in all sizes required to fit the ten most popular sizes of machine and sheet metal screws. Economically priced.

New Compressor • • P-155

Products: "Gemco" refrigeration compressor especially designed for

THE KRAMER COOLER



Here shown is the latest Kramer Panel Unit for Reach-in and Walk-in Refrigerators. Its flat, thin proportions occupy but a minimum of usable space; its fan motor and expansion valve are easily reached without removing refrigerator shelves; and its down-draft, back-wall air delivery distributes the cool air uniformly throughout the refrigerator. All units have a built-in, double tube heat interchanger to assure efficient coil and expansion operation.

Send for Bulletin R-142-RI describing this and other types of Kramer Evaporators.

No. 7

KRAMER TRENTON CO. COILS THAT COULD

HEAT TRANSFER EQUIPMENT

8

package type air conditioning units.

Manufacturer: General Engineering & Mfg. Co., St. Louis.

Features: Compressor and motor are totally enclosed. Two-stage compressor design effects a saving of condensing water. Unloading for starting and capacity reduction are easily accomplished by bypassing from first stage after intercooling to compressor suction. Unit is light in weight.

Shop Tool • • • P-156

Product: Nipple-guide and pipe-

chuck tool.

Manufacturer: Wing Laboratory, Grass Lake, Mich.

Features: Designed to provide simple and quick means of threading close or special pipe nipple on the job, without special trips to a stock of pipe fittings. In use, nipple-guide is pushed through and tapered threads are screwed by hand, or with pipe wrench, into half completed pipe nipple held in the pipe-chuck. Available in sizes for ½, ¼, ¾, ½, ¾ and 1" standard pipe.

THE MARKET PLACE

Rates: for "Positions Wanted" \$3.50 minimum, limit 25 words. For all other classifications \$3.50 minimum for 25 words, each additional word 10e; boldface type or all capitals, \$6.00 minimum for 25 words, each additional word 15e; limit 50 words. Box addresses count as five words. All insertions are payable in advance.

POSITIONS AVAILABLE

Manufacturer of automatic controls has several openings in Sales Department for qualified Sales Engineers. Knowledge of refrigeration and ability to travel essential. Compensation on salary plus bonus arrangement. Forward complete information for personal interview. Box 1050, Refrigeration Industry.

Established service business, retail sales, motor repairing, commercial equipment. Good opportunity for capable man. Have other interests. Will sell at inventory. Write or wire. Frigid Service, Jackson, Tenn.

FOR SALE

NEW CUPRO-NICKEL TUBES

100,000 lbs. ½" O.D. x 18 ga. Wall 70% Copper - 30% Nickel 80%" and 47%" Lengths Soft - Can be Flared or Coiled Suitable for Refrigeration and Oil Work ½ Hard Sheared Edge

Seaboard Steel Co., New Haven, Conn. Telephone: 8-0929 8-2034

FOR SALE: 12 - 16 - 19 - 22 and 26 cubic ft freezer cabinets. Write for list and prices. Rathbun Refrigeration Company, 44 Market Avenue, N.W., Grand Rapids 2, Michigan.

FOR SALE—Air-cooled & Water-cooled, remanufactured condensing units, ¼ up to 2 H.P. Write for particulars, Edison Cooling Corp., 310 East 149 St., Bronx 51, N. Y.

IMMEDIATE DELIVERY

20 cu. ft. all-steel glass top Freezers, Ice Cream, Frozen Food open and closed cabinets; React-ins, Wood and Metal Storage Boxes; Beverage Coolers; Air Conditioning Units; Motors 5-20 h.p.; etc. Frigitemp Corp., 931 Bergen St., Brooklyn 16, N. Y. Main 2-9093.

Used Kelvinator and Frigidaire 1/3 H.P. Compressors, Rich Ice Cream Co., telephone Washington 6650, Buffalo 4, N. Y.

NATIONALLY KNOWN ICE CREAM CABINETS FOR IMMEDIATE DELIVERY — WITH OR WITHOUT MACHINES. 4, 6 or 8 holes. INQUIRE FRIGITEMP CORP., 931 BERGEN ST., BKLYN 16, N. Y.



All Right ... where does the Moisture go?

THAWZONE DATA

"It sure worked on that job", says Mr. Service Engineer. "But where does the moisture go when THAWZONE acts on it?"

"We'll try to explain", we say. "But please bear with

us if our explanation sounds complicated"

Water has the chemical formula H₂O. Chemically, however, it generally behaves as if it were made up of two parts: an H⁺ (positive hydrogen ion) and an OH—(negative hydroxyl ion). There are various compounds that interact with water to split it up this way. Most of them are unsuited to a refrigeration system.

THAWZONE, however, is a solution of compounds which are suitable. All they do is to "grab" on to the H+ with one part and the OH— with another. The resulting new compounds are complex, but oil-soluble and inert. As a matter of fact, to separate these materials and identify them is almost impossible. This is another indication of their inertness and similarity to the oil normally present in refrigerating systems.



PROFITS FOR CONTRACTORS Continued from page 33

\$100. This repayment of money which is owed, being neither a direct expense, indirect expense, or an office expense, is distributed in the last column on the extreme right, Column 21, headed "Other Expenditures". Any loans, withdrawals or additional money put into the company by the proprietor would be handled in a like manner.

The foregoing are typical entries and cover usual transactions. All entries will be comparable to these, or variations of them.

If the contractor operates a retail store in connection with his business, a separate column should be provided for purchases for the store.

Referring back to Item 5 in Fig 1, this is a purchase from Harlow Bros. of stock for the retail store. This accounting method provides a positive and accurate record of all such purchases. Entries in Columns 1, 2 and 3 are the same, and the purchase then is distributed to Column 19 which may be headed up "Purchases for Store."



Now Ready . . . the New

FREEZRLARM

. . . it's a PROFIT-MAKER!
. . . it's a TROUBLE-SAVER!

Freezrlarm effectively renders a REAL service to every customer. It is the exclusive, self-contained warning signal which sounds an alarm, whenever temperature rises, from ANY cause. Not connected in any way with electrical systems. You make \$9.60 on every sale. Send in a sample order today and get going with this fine profitmaker.

Price \$12.35 to authorized dealers
Maintained retail price......\$21.95

FREEZRLARM CO.

832 S. Ludlow St., Dayton 2, Ohio

By keeping Purchases for Store in a separate column and by taking into consideration the beginning and ending inventory, the cost of goods sold is easily obtained for any desired period.

In the "Cash Receipts" book, similar provision is made to record all store or retail sales. Thus the amount of profit made from the store sales is available by subtracting the cost of goods from the retail sales.

The contractor who operates a retail store has no doubt found it difficult to keep his retail sales separate from materials taken from stores and used on contracts. Perhaps most materials used on jobs will be purchased direct, but many items will doubtless be taken from the store and used on the job.

That can very well be handled by the manner illustrated in the last entry shown on the Cash Paid Out Record in Figure No. 1. This is a transfer from Store to Job. No money changes hands, so no entries are made in Columns 1, 2 and 3.

In this case \$60 worth of fixtures were taken off the shelf from the store.



NOT only does the DFN System stop those triple threats of trouble — moisture, sediment and acid — but it stops them in greater volume, thus, requires less recharging. Each cartridge is scientifically factory-packed to provide complete refrigerant dispersion and insure thorough contact with the drying agent. Hermetic sealing preserves 100% dehydrating effectiveness. An exclusive filter-stainer

traps the finest particles and holds more without pressure drop. And the DFN System is simpler and faster to service. The cartridge slips easily into the permanent shell—no fuss, no muss and no loss of dehydrating strength. This combination of complete protection, greater capacity and unequalled servicing ease makes the DFN System the outstanding value in its field. Ask your distributor or write today for Catalog R-7.

McIntire Connector Company, 257 Jefferson St., Newark 5, N. J.



They originally had been purchased and charged to the store under the assumption that they would be sold at retail.

Then it was found that the proprietor needed these materials on Job 11, therefore they were taken out of stock and charged to the job in the manner shown. The \$60, which is a deduction, is entered in red ink in Column 19, or the figure may be entered and circled as is shown in this illustration. (In footing the columns the red ink, or circled, figures are deducted, not added.) Any item transferred to a job in this manner should always be transferred at cost price, not selling price.

All entries are made in this manner until the bottom of the page is reached, when all columns should be totaled.

If your book is in balance, the total of the third column will be the total of your first and second columns, and the total of the third column will also be equal to all of the other columns to the right of it because they are distributions of Column 3. After being sure your sheet is in balance, you carry forward the totals to the next page, continuing this operation until the end of the year. Carrying totals forward for the entire year is preferred by many.

The successful operator must know the percentage of indirect or overhead operating and office expense, to direct operating expense. The contractor who does not know this percentage is the one who makes the





Around the world, the skill and craftsmanship of Americans is famous . . . and that same fine quality is found in "American" refrigeration products. At our new plant-one of the finest in design and equipment—only the best is qualified to bear this name plate.

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REFRIGERATION

Beauty FREEZER FIELD

American Freezers for home, farm and commercial use are dual purpose—both quick-freeze and zero-storage. A beautiful line of 8, 15 and 22 cubic foot cabinets -engineered for style and rugged duty.



ween of the COOLERS

"Extensional" walk-in Coolers, 6'x6'x71/2', and larger, made of wood, either plain or faced with aluminum or gleaming white enamel finish, for every purpose. Also the new Arid-Air Bottle Cooler: the last word in dry beverage cooling.



Write for new colorful brochure and price lists-some dealerships still available.

REFRIGERATOR & MACHINE, inc.

2700 University Avenue, N. E., Minneapolis 13, Minn.

ridiculous bids. He makes himself and his competitors look bad. He loses money when his bids are too low, and he loses jobs when his bids are too high.

When accounts are kept as outlined above, the percentage of indirect or overhead expense to direct expense is easily determined. It is obtained by taking the total direct operating job expenses, which are the totals of Columns 4 to 9 inclusive, and dividing this total into the total indirect expenses (totals of Columns 10 to 18 inclusive) for the same period.

The longer the period of time covered, the more comprehensive and accurate this percentage will be. For example, the period should include at least a 3 months' period in which O.A.B. and Unemployment taxes are paid and entered in Cash Disbursements. A six months or twelve months period is better still.

When this percentage is obtained it gives the operator knowledge of the percentage which must be added to direct operating (job) expenses to recover overhead expenses. Knowing your expenses or costs, you can then add a percentage for profit.

America's Quality Line of COMMERCIAL REFRIGERATOR HARDWARE



A new, exclusive principle was conceived in the development of this trip lock. It provides the strongest, most positive locking grip ever devised . . . with smooth, finger-tip operation. There is mothing comparable — in action or effectiveness — on the market.



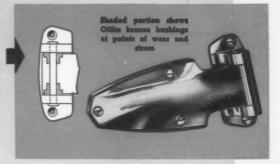
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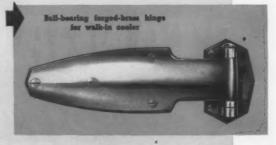
ENGINEERING

Details count. Provision of self-lubricating Oilite bronze bushings . . . insertion of a stainless steel pin . . . these are, perhaps, mere details in the engineering of a moderate capacity hinge. But in Grand Rapids Brass Company products, such details earn you the good will of users long after you have forgotten the sale.



This rugged forged brass hinge is furnished for cooler doors weighing into the handreds of pounds. But it floats like a feather on its ball bearings — stands the shock of hundreds of daily openings and closings. Because it's designed right, engineered right, built right by Grand Rapids Brass.







This company seeks no credit for itself from the satisfied user of its refrigerator hardware. That credit properly goes to the concern which designs, installs, and services the entire job. Our satisfaction comes, instead, from the growing list of leading manufacturers who entrust their good name to the enduring performance of Grand Rapids Brass Company products. May we send YOU our latest catalog?

Grand Rapids Brass Company

Makers of Dependable Refrigerator Hardware for over 40 Years

Grand Rapids 1, Michigan



The publications listed below are available to readers without charge. Simply list on the postcard provided in this issue the numbers of the items you wish to receive, and send it to THE REFRIGERATION INDUSTRY, 1240 Ontario Street, Cleveland 13, Ohio. Your requests will then be forwarded directly to the companies concerned.

361—Frozen Foods Information . . . A mimeographed booklet issued by Refrigeration Corp. of America listing "Frozen Foods Questions and Answers". Gives background information on freezing of foods, storage, locker plant operation, "Frigid-Freeze" cabinets and merchandising plans.

362—Commercial Compressors . . . A folder issued by Diceler division of General Machine & Mfg. Co. announcing its newly designed line of refrigeration compressors and condensing units. Tells key features of the Diceler units.

363—Industrial Adhesive . . . A booklet (A-6031) available from the Finishes division of the duPont Co. on its recently developed No. 4665 cement, a liquid adhesive suitable for honding woods, metals, plastics and other substances.

364—Refrigerator Motor Brushes . . . A folder (form No. 1063) issued by Ohio Carbon Co. to describe and list the brushes in its Kit No. 45-A, designed to service popular types of refrigerator motors of 1/8 to 2 hp, a.c. current.

365—New Brass Cleaner . . . A bulletin available from Enthone, Inc. on its new alkali cleaner, called Enthone Brass Cleaner. The cleaner is said to have no tarnishing action on active metals including copper, brass, bronze, nickel, silver, tin and lead, and to have high detergent ability.

366—Carbide Tipped Drills . . . A four-page color bulletin issued by Metro Tool & Gauge Co. giving description, specifications and prices on new type Metro standard carbide tipped masonry drills, for use by contractors, machinery installers, electricians, and others.

367—Cold Plates . . . A 36-page catalog issued by Stangard-Dickerson Corp. on its prime surface cold plates. Gives technical information on applications for various commercial and industrial applications. Includes 12 pages of engineering handbook data on load calculations, storage temperatures, commercial box survey information, etc.

368—Close Coupled Pumps...An eight-page bulletin (242) illustrating and describing the Compacunit line of close coupled pumps manefactured by Warren Steam Pump Co., Inc., which are claimed to have numerous applications in the refrigeration field.

369—Fin Coil Data . . . A catalog (No. 120) issued by Rempe Co. containing both refrigeration data and engineering information on its fin coils and custom built air conditioning units for low temperature cooling. Designed as aid in selecting coils for various types of commercial applications. Lists prices, other specifications.

370—Vibro-Insulators . . . A new booklet on its line of Vibro-Insulators, shock-cushioning devices, issued by B. F. Goodrich Co. Includes descriptions of new types, suitable for fans, pumps, similar equipment, gives outline on selection, cites typical applications.

371—Sharpening Drills . . . A 24page manual (G-1) issued by Republic Drill & Tool Co. on the correct principles of sharpening twist drills. Contains detailed data on care of twist drills, pointers for best results in drilling various materials.

Frozen Food Cases accumulate frost constantly, but this does not mean that it is harmless. It is a fallacy to think that frost on the surface of the case creates more cold. Directly the opposite is true . . . it insulates the refrigerated walls of the case. To remove, use a wooden paddle or a fiber brush. Never use sharp tools or wire brush for this purpose. Above all, watch that temperature reading. An even temperature of about zero degrees is recommended for a variety of frozen foods. ("Refrigerator Care Pays Premiums," Super Market Merchandising.)







Round Pegs for Round Holes

Standing back of every refrigeration part manufactured by Kelvinator is the same experience... the same high quality materials ... the same precision equipment... and the same skilled and experienced operators that have established an outstanding reputation for quality in refrigeration products.

Be sure you get the part made for the job by ordering genuine Kelvinator manufactured refrigeration parts. Quickly available from your nearest Kelvinator parts depot.

Division of Nash-Kelvinator Corp. Detroit, Michigan

Kelvinator



CONDENSING UNITS OPEN AND SEALED

Measure Your Compressor Oil Business by this Yardstick

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Refrigeration Engineering

XIV. Cooling Water for Carbonated Beverages

PART II

N all water-cooling refriger-O ation load estimates, the refrigeration engineer must know:

- 1. The temperature of supply water entering cooler.
- 2. The final temperature desired for the cooled water.
- 3. The number of gallons of water per hour required.
- 4. The "K" factor for cooling water "K" water 1° = 1 BTU's per

 - 1 pint water = 1 pound
 - 1 gal. water weighs 8.3 lbs.

EXAMPLE

Example: In water temperature less out water temperature equals temperature reduction.

Temperature reduction × "K" factor × pounds per hour equals BTU's per hour to cool water. When the refrigeration load requirements per hour are established, provisions for heat leak, loss of temperature in flow to carbonator must be allowed. 10% to 15% of water load usually will cover this loss. (Pipes should be insulated from water cooler to carbonator.)

HOURLY LOAD

These figures provide the hourly refrigeration load. It is usually considered good practice to add a safety factor of from 10% to 15% to these figures and to figure load on condensing unit operation of from 16 to 18 hours out of a 24-hour period.

Manufacturers of water coolers usually provide figures giving recommended refrigerant gas suction pressures. With this information, it is a simple matter for the refrigeration engineer to determine the proper size water cooler, condensing unit and other accessory equipment needed to do a satisfactory job of water cool-

Below is an example of water cooling load of 200 gal. water per hour cooled from 80 F. to 35. F. or a 45 F. temperature difference.

EXAMPLE

200 gal. × 8.3# per gal. = 1660# Inlet water 80 F. Outlet water 35 F.

45 F. T.D.

"K" Factor water = 1 $1660 \times 45 \times 1 = 74,700$

BTU/hr. 74,700 10% added for heat leak

and service

10% added safety factor 7.470

Total BTU/hr. 89,640

1/2 for 18-hour operation 29,880

LOAD REQUIREMENTS

Condensing unit required: based on operating at 25° gas suction pressure Freon refrigerant, a single 15 hp water-cooled condensing unit should provide approximately 173,000 BTU per hour. As the load requirements are 119,520 BTU per hour, the 10 hp water cooled condensing unit falls slightly under the load requirements, as it provides approximately 110,000 BTU. It is therefore advisable to select a

FEDDERS-QUIGAN PLANS UNIT AIR CONDITIONERS

Plans to manufacture unit air conditioners for room cooling were announced recently by Frank J. Quigan, chairman of Fedders-Quigan Corp., Buffalo, N. Y. Engineering development of the first of several models has been completed, Mr. Quigan said, and shipments will start in 1947, subject to availability of materials.

CONNOR NAMES OUTLETS IN THREE AREAS

W. B. Connor Engineering Corp. has appointed O. K. McCullough Co., Kansas City, Mo., and Products, Inc., Des Moines, Iowa, to handle its line of "Dorex" air recovery equipment and "Kno-Draft" air diffusers in those areas. Russell J. Smith, St. Louis, has been named to handle Kno-Draft equipment only in that territory.





• BY PARAGON TIME SWITCHES

Why worry about defrosting? Here's a Switch that provides dependable time control for SHARP FREEZERS in all types of automatic defrosting . . . in locker plants, dairies, breweries, packing houses and commercial refrigeration. Regular defrosting increases efficiency and reduces operating costs.

The PARAGON LINE offers service proved . . . precision . . . quality Time Switches and Timers . . . rugged and durable . . . with a great performance record.

Paragon can produce Time Controls for any system such as Freon, brine, ammonia, etc., regardless of temperature and whether defrosting is done by hot vapor, electric heat or water spray. Put your defrosting problems up to Paragon engineers.

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15 hp condensing unit in this particular instance.

Refrigeration for cooling syrups can be handled with an instantaneous self-contained water cooler, whereby syrups are cooled as they flow through the coils or cooling may be accomplished by using a standard type storage cooler in which syrups are placed in bulk and held until temperature is lowered.

SYRUP COOLING IS SLOW

As syrups contain approximately 60% sugar, the cooling or removal of heat is considerably slower than cooling of water. This requires allowances being made for the additional refrigeration required to cool one gallon of syrup, as compared to the cooling of water.

Much greater precaution must also be taken to keep the equipment clean, to prevent contamination occurring in the coils and system. Coils handling syrups must be cleaned carefully at frequent periods, often each day after production has been completed.

USE STORAGE COOLER

Because of this fact, small operations usually cool syrups in bulk in a storage cooler as this method greatly simplifies the problem

Methods of figuring load capacities and refrigeration requirements are handled the same as other loads are figured with the various types of equipment; that is, with either storage coolers or instantaneous type coolers.

The cooling of bottled beverages at the plant is usually done only in those cases when the product is sold for consumption at the plant, or when deliveries are made of cooled products to locations where quick consumption is planned.

The regular production for dis-

tribution to regular retail outlets is stocked in crates in the plant and allowed to warm up to room temperatures. When delivery is made of these products, the retailer places the bottled beverages in a beverage cooler which cools the product to the desired temperature for dispensing and consumption.

VENDING MACHINES

There are also many vending machines used to automatically dispense cooled beverages. These vending machines are self-contained units, assembled in most cases by the manufacturer, with the refrigeration equipment built into the unit.

Retail beverage dispensers are usually made either as a dry type cooler, although wet coolers are sometimes used.

WET & DRY COOLERS

Wet-type coolers reduce beverage temperatures usually in much less time than the dry type coolers but are more trouble to use, as the bottles are wet and dripping when removed from the cooler and must be wiped dry; also the necessity of changing the water and keeping the coolers in a sanitary condition is a much greater problem.

The dry cooler requires a longer cooling period, but is generally more popular as the bottles are dry and can be handled much faster.

We will discuss the refrigeration load requirements and details of construction for beverage coolers in a later chapter of the Manual.

The use of refrigeration in beverage production and handling offers a wide, ever-increasing need for refrigeration equipment. This is a big market which should offer great sales opportunities to the refrigeration industry.

LIQUID SYSTEMS . . .

Continued from page 31

with the bulb flat against the evaporator tubing.

The soda and plain water cooling coils are made from stainless steel tubing using new type sealastic fittings.

The expansion valve is factory set to maintain best operating conditions and should not require readjustment. Ice should form on all coils of this evaporator.

In filling the water cooling section with water at the time of installation, care should be taken not to fill too full. Fill with plain water to the level of the second stainless steel loop from the top of the water cooling coil so that when the ice has built up on the evaporator coils, raising the water level due to the expansion of the water on freezing, the top loop will just be covered. If filled too full, ice may build up under the cover plates or may freeze the soda and water leaders.

Check Valve

A ½ inch check valve is installed in the suction line from the ice cream section and located in the service panel.

Heat Exchanger

The suction lines from the ice cream and water cooling section evaporators are tee'd together in the service panel. All refrigerant suction vapor passes thru a loop heat exchanger counter-flow to the incoming warmer liquid refrigerant.

Service Panel

All refrigerant control valves, heat exchanger, check valve, and temperature control are grouped and accessibly located in a large service opening (Fig. 28) in the front of the fountain at the dry storage compartment.

Refrigerant Charge

Coldsleeve fountains are shipped dry. Refrigerant and oil must be added to the system at the time of installation. The approximate amount of F:12 refrigerant for the water cooling section is 3 lbs. while the charge



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CAN BE USED OVER REPEATEDLY

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S SIMPLE TO APPLY

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for the ice cream section should be determined on the basis of 2 lbs. per ice cream sleeve. In addition, add ½ lb. for each 10 ft. of % inch liquid line.

Refrigerant oil must be added at the time of installation in the ratio of 1 lb. (1 pint) of oil for each 10 lbs. of F-12 refrigerant charged in to the system. *IMPORTANT*: Coldsleeve fountains must be used *only* with F-12 refrigerant and F-12 condensing units. The fountain is equipped with all valves and controls for F-12.

The connections for the condensing

unit refrigeration lines are made to the heat exchanger in the service panel. Male flare connectors are provided for 3/8 inch liquid and 5/8 inch suction lines.

Silica gel dryers should be used on all F-12 installations and installed vertically in the liquid line at the condensing unit to prevent operating difficulty from moisture in the system. Be sure the dryer is installed with the flow in the direction indicated.

A liquid line indicator (sight glass) should also be installed on the *outlet* side of the dryer to facilitate checking initial charge as well as diagnosing service troubles, particularly refrigerant shortage.

Condensing Unit Control

A temperature control is supplied with each Coldsleeve fountain. The control bulb is inserted in a well attached to the ice cream sleeve and accessible thru the dry storage compartment. The approximate setting on the temperature control is 0° cut-out and 6° cut-in (6° differential). The settings will depend on the characteristics of the particular manufacturer's ice cream.

This single temperature switch will control the entire fountain except on heavy water load installations. For heavy water load locations (very busy stores), use a dual control hook-up consisting of a temperature control and a low pressure control connected in electrical parallel.

If the condensing unit is equipped with a high pressure cut-out control, connect it in electrical series with the fountain temperature control. If the condensing unit is equipped with a combination low pressure-high pressure cut-out control, connect the fountain temperature control in parallel with the low pressure control. Set the low pressure control at 10 lb. cut-out and 35 lb. cut-in. With these settings the low pressure control will respond to the water load only while the temperature control will respond to ice cream section load.

Adjustments

Only minor changes should be made, if any, in the adjustment of the expansion valves over the factory setting. Don't attempt to readjust valves until the entire fountain has attained normal operating conditions.

If the evaporator is frosting back excessively thru the TMV valve after the fountain has pulled down to normal operating conditions, the water cooling section expansion valve is open too far and the adjustment should be turned clockwise (looking at the adjustment end of the valve) to close off the valve slightly. Turning the adjusting stem clockwise raises the superheat by closing the valve, while counter-clockwise decreases the superheat by opening the valve. A 3/16 inch key wrench will fit the adjusting stem.

Locate the TMV valve bulb clip to



obtain desired ice formation on the refrigeration coils in the water bath. Swing the bulb clip downward toward the refrigeration coil for less ice, away (toward horozontal) for more ice. The TMV65 should be adjusted so that ice forms out to and slightly beyond its control bulb. IMPORTANT: This valve is very sensitive on water cooling and should be readjusted only ½ turn at a time. To decrease ice, raise the valve temperature setting by turning adjustment to the right (clockwise).

Shortage of Refrigerant

Refrigerant shortage on this fountain will show up in the water cooling section. If short of refrigerant, the ice formation will be heavy at the top two loops (inlet) of the evaporator coil in the water bath with no ice at the midsection and toward the bottom.

The amount of ice formation from the midsection to the bottom will depend on how short the system is of refrigerant. A plugged expansion valve, expansion valve not open wide enough, or an ice control valve set too warm may cause the same result.

COMPARISON

WILL PROVE IT'S BETTER! With a sight glass in the liquid line refrigerant shortage can readily be detected.

COMPLETE MODELS 5101, 5102, 5103

The new Liquid "Complete" fountains (Fig. 29) closely parallel the Coldsleeve fountains in general design and refrigeration hook-up. The refrigeration system is exactly the same except for the ice cream storage compartment arrangement. While the Coldsleeve had individual sleeves, the Complete has 20 and 30-gal. compartments, with refrigerating coils wrapped around all four sides (Fig. 30).

The control bulb for the expansion valve is located in the upper bulb well at the rear right hand corner of the dry storage compartment. The valve is factory adjusted to obtain best performance. It should not be necessary to readjust the valve in any way at the time of start up of the unit.

All control valves are accessibly located within the dry storage com-





WATER—There's a Temprite cooler to fit every type of drinking water application in office building, factory, school, etc., etc.



CHEMICAL & INDUSTRIAL USES—Temprite units cool water, caustics, oils and many chemicals in laboratory or manufacturing processes.



BEVERAGES—Accurate Temprite coolers are widely used in soda fountains, taverns and vending machines, or wherever carbonated and non-carbonated beverages are dispensed.

18 VERSATILE TEMPRITE MODELS HANDLE WIDE RANGE OF APPLICATIONS

The famous Temprite liquid cooling units, long recognized for instantaneous, split-second cooling, are available to you in a wide range of no less than 18 models. Units are noted for their compact, easy to handle size, perfect temperature control and large capacity.

The cooling coils are directly submerged in the refrigerant itself which results in split-second cooling and high operating efficiency.

All Temprites are constructed entirely of non-corrosive materials. Can be applied to either new or existing applications. Write today for specifications.

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Write for Stock and Price List. Learn

how you can save by eliminating

TEMPRITE PRODUCTS CORP.

Originators of Instantaneous



Liquid Cooling Devices

41 PIQUETTE AVENUE

DETROIT 2. MICHIGAN

"call backs".

partment.

The water cooling section is refrigerated by the same type evaporator used on the Coldsleeve. The expansion valve is located on the side wall of the dry storage compartment. A thermostatic modulating valve (TMV65) controls the ice formation and is also located on the side wall of the dry storage compartment. No electric circulator is provided for the water bath due to the smaller water cooling requirements on installations using this type fixture.

The suction line from the TMV65

is tee'd into the suction line from the ice cream section evaporator and all the suction gas passes through a loop heat exchanger located under the sink or workboard section.

The connections at the heat exchanger for the self-contained condensing unit are ½ inch and ½ inch. Adapter fittings are provided for 3% inch liquid and 5% inch suction lines when remote condensing units are used.

Fountains for remote condensing unit installation are shipped dry. Refrigerant and oil must be added at the time of installation. The approximate amount of refrigerant charge for the water cooling section is about 3 lbs. F-12, while the charge for the ice cream evaporator is as follows: 30-gal. fountain, 3 lbs. of refrigerant; 40-gal. fountain, 334lbs.; 50-gal. fountain, 4½ lbs.

A White-Rodgers 1668-#9 temperature control is supplied with each Complete fountain and this switch alone will control the condensing unit and maintain proper temperatures. A low pressure control is not necessary.

Set the switch for the temperature desired on the calibrated dial (at the fixed indicator, cut-out setting) and set the differential indicator for about 6° differential.

SELF-CONTAINED COMPLETE FOUNTAINS

The 30, 40 and 50-gal. Complete soda fountains may be factory equipped with a self-contained ½-hp Model LC662.6 improved Liquid-Brunner condensing unit.

The condensing units, with the exception of the new improved Brunner compressor with larger and more completely shrouded condenser, are in general the same as described in the April 1946 issue of THE REFRIGERATION INDUSTRY. Starting up of the self-contained fountain likewise is the same as covered in that discussion.

BOBTAIL FOUNTAINS

Liquid "Bobtail" fountains now in production are similar in general appearance to the prewar models covered in Part 5 of this series (THE REFRIGERATION I N D U S T R Y, MAY, 1946) but with many design improvements and refinement of the refrigeration systems.

The length of the smaller Bobtail Model 5201 has been increased to 2 feet 7½ inches while the working top has been raised to 33 inches in order to line up with the top of most ice cream cabinets.

The 5 ft. 6 inch Bobtail Model 5202 (Fig. 31) likewise embodies many improvements over its prewar counterpart.

Installation is essentially the same as outlined for the prewar models with the exception that stainless steel



PRESSURE, TEMPERATURE,
FLOW, ELECTRICAL AND LEVEL
MEASURING INSTRUMENTS

6 out of 10

manufacturers of original equipment specify U. S. G.

UNITED STATES GAUGE

DIVISION OF AMERICAN MACHINE AND METALS, INC.

SELLERSVILLE, PENNSYLVANIA (1)

leader lines from the carbonator to the Bobtail are now available.

Refrigeration

Refrigeration of the water cooling section on both Bobtails has been substantially improved and cooling capacity increased through the use of an evaporator similar to that used on "Coldsleeve" fountains. This evaporator provides refrigeration on all four sides of the stainless steel soda and water cooling coil.

An additional evaporator in series with the water cooling coils refrigerates the crushed fruit jars and dry storage compartment which along with the high productivity of the copper lining results in lower storage compartment temperatures.

The syrups in the 2 foot 7½ inch Bobtail are cooled by actual contact with the refrigerated water in the water cooling compartment. The 5 foot 6 inch Bobtail features the new Coldwall syrup rail refrigeration wherein the evaporator tubing is located behind the stainless steel lining providing a rail interior free from refrigeration pipes and at the same time protecting the refrigeration tubing.



REMOVES

GREASE, GRIME, PAINT, WITHOUT WATER!

- ★ GENTLE not injurious to skin
 ★ KEEPS HANDS SOFT fortified
- ★ KEEPS HANDS SOFT fortified with Lanolin and Vegetable Oils
- ★ QUICK ACTING guaranteed

satisfaction NOW in our own building to keep up with ever increasing demand. FREE

An Automatic Products non-adjustable thermostatic expansion valve Model F206, orifice .035 inch is used to control the refrigerant flow while a White Rodgers Temperature control No. 1668-#10 is used to control temperature and condensing unit operation.

The condensing unit on the 2 foot $7\frac{1}{2}$ inch Bobtail is the improved Liquid-Copelametic $\frac{1}{4}$ -hp using the new 1946 Copelametic compressor. The condensing unit on the 5 foot 6 inch Bobtail is a high capacity Liquid-Copelametic $\frac{1}{3}$ hp likewise using the

new 1946 Copelametic 1/3 hp compressor.

For other general details on starting up these bobtails, refer to the May, 1946 issue of THE REFRIGERATION INDUSTRY.

For further service information on the equipment described in this series of service articles on soda fountain equipment, readers are invited to write to THE REFRIGERATION INDUSTRY or direct to the author, J. G. Praetz, general service manager, The Liquid Carbonic Corp., 3100 South Kedzie Ave., Chicago 23, Ill.



SMELTING COMPANY

ROSTON

. DETROIT

WEST HORFOLK,

Help Yourself To Parts



Partial self service is provided in this remodeled sales and display room of Refrigeration Supplies Distributor, Los Angeles wholesaler. Note the neat arrangement of smaller items on the compartmented shelves and the maximum display afforded to larger pieces of equipment by placing them in the open floor area.

HERE'S STORY OF JOB WHOLESALER DOES TO "KEEP 'EM RUNNING"

A wartime system set up within the refrigeration industry to insure fast parts distribution, even under emergency conditions, has averted serious losses in foods and other perishables which must be kept under constant refrigeration during transportation and storage.

Consisting of a nation-wide network of refrigeration wholesalers and parts depot, the system has proved its outstanding peacetime value to both manufacturers and users as strikes and material shortages delayed production of badly needed new equipment.

Growth of REWA has closely paralleled that of the Refrigeration Equipment Manufacturers Association, the latter recently passing the 100-mark in membership and being by far the largest association of manufacturers in the industry. Both REWA and REMA were organized in the same city about 11 years ago, and since have cooperated closely with one another in the industry's progress and expansion.

Members of the Refrigeration Equipment Wholesalers Association, having a total volume of business estimated at \$50,000,000 annually, serve dealers and distributors, service engineers, contractors and other trade groups throughout the mechanical refrigeration, air conditioning and frozen food equipment fields.

T. I. Glou of Syracuse, N. Y., is president of REWA. Other officers are George J. Roche, Baltimore, vicepresident; Harold G. Stern, Seattle, secretary, and Alex. H. Holcombe, Jr., Philadelphia, treasurer, Members of the board of directors are Harold R. McCombs, Denver, immediate past president; Irving J. Fajans, New York; Edward C. Marsden, Hartford, Conn.; Joseph M. Mideke, Oklahoma City; Warren H. Parker, Greensboro, N. C.; J. D. Ross, Montreal, Canada; H. W. Small, St. Paul, and Otto A. Friemel, St. Louis. Headquarters of the organization, with H. S. McCloud as executive secretary, are in Cincin-

SKILSAW BUYS PNEUMATIC TOOL FIRM IN AURORA

Skilsaw, Inc., Chicago manufacturer of portable electric tools, has announced the purchase of the Forss Pneumatic Tool Co. of Aurora, Ill. The latter company, manufacturer of a general line of small, portable pneumatic tools, was acquired for a cash consideration understood to be in excess of \$100.000.

As a result of the acquisition, Skilsaw will be able to supplement its line of portable electric tools with a line of portable pneumatic tools. Sales potential of the present Forss plant at Aurora, consisting of some 40,000 sq. ft., aggregates several million dollars a year, Bolton Sullivan, Skilsaw president, said.

The pneumatic tools will be sold direct to distributors, along with the Skilsaw line, through the latter's sales organization.

CROSLEY REPORTS LOSS

Report of operations for Crosley Corp. for the first half of 1946 showed net sales of \$12,298,135. Net loss from operations for the period was \$304,048, after giving effect to anticipated refunds of the prior year's excess profits taxes amounting to \$391,100.

NEW COMMERCIAL FIRM

Dalton B. Suggs has established the Refrigeration Engineering Corp. to engage in the commercial refrigeration and air conditioning business at 1401 West 5th St., Ft. Worth, Tex.

Wholesaling Can Be Fun!



Yes, wholesaling can be fun. At least that's what this group of employes of Refrigeration Supply Co., Harrisburg, Pa., seem to think as they pose for their picture at the company's annual picnic. Owned and operate by Russell D. Jones, this organization was started 10 years ago, and during that time the staff has grown in size from one person to eighteen.

If your service costs seem to be increasing out of all proportion



ELIMINATE THEM AT THE START

White-Rodgers automatic controls cut service costs. This has been proved by manufacturers who have kept accurate records.

One typical manufacturer found that his service costs decreased

far more than his original control costs increased. Not only that, but his equipment kept working more dependably, resulting in better-satisfied customers, and a better reputation for his firm.

If your products depend for their accuracy and reliability on temperature or pressure control, equip them with White-Rodgers automatic controls.









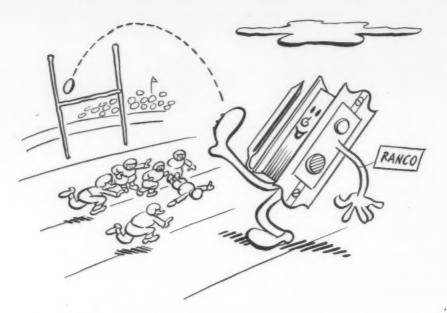
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Point for point comparison proves Ranco Refrigeration Controls are the finest.

Ranco Alone has ALL of these important features in commercial refrigeration controls—

Rust, corrosion resisting stainless steel parts-

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Uniform fixture temperature-

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See Your Jobber



TYPE 0-1408

Ranco Type O-1408 commercial temperature control for general applications.

Ranco Inc.

COLUMBUS 1, OHIO

Here's how

MAN'S DEPARTMENT SERVICE

Buy Them in Pairs

It is a good practice to buy lapping plates in pairs. To prevent hollows from forming in them after they have been in use for a time, make it a habit to lap them against one another. This will smooth out the plates, and will prevent otherwise inaccurate lapping.

Tips on Tubing

From a booklet "Tube Trails with the Refrigeration Serviceman," recently issued by Wolverine Tube Division, we bring you the following tip on proper methods of cutting and burring:

"Cutting tools may not be available or the tube to be cut may be too large to fit the tool you have. When such is the case and you use a hacksaw, observe the following to obtain the best results:

"1. Don't force the cut-the tube will flatten.

"2. Make cut at right angle to the

"3. After cut is made-use a file or

THE job of lapping small suc-tion and discharge valves could be made less disagreeable to the fingers by using a rubber block constructed from any old piece of rubber around the shop. A $2'' \times 2'' \times 2''$ cutout piece is handy. The rubber is simply placed on the valve and both the rubber and the valve is pushed around the lapping block until the valve is lapped.

L. Greene, New York City

knife to remove the rough burr produced by cutting.

"4. If first cut has faulty angle, either make another cut or square it up with a file.

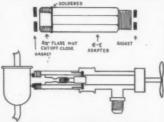
"5. If a tube cutter is used, do not apply too much pressure or the tube will be forced out of round.

"6. Also be sure to remove burr from inside wall of tube to prevent a rolled-edge-flare."

Edited by Warren W. Farr

IN the later models of the Frigidaire Meter-Miser unit, the evacuation and charging of this unit was done by the factory through a spe-cial fitting located off the suction line strainer at the unit. The her-metic purging and charging valve kits on the market do not have an adapter which fits this type of con-nection and none are available from the Frigidaire factory.

To overcome this, I improvised one very simply and with no special materials or equipment, and believe



it or not, it works like a charm.

Take an ordinary 3\(\frac{3}{2} \)" flare nut and cut off the neck close to the body of the nut. Soft solder (or silver-solder for permanency) this to the G-E adapter supplied with your hermetic valve kit. This is a fitting 2" long and is made to fit the G-E model CG 1-A-16.

The purge screw on the special unit fitting has a 3%" hexagon head and as none of the adapter wrenches in the hermetic kit fit this, it is a simple matter to cut a screw driver slot with a hack saw into the hexagon head. The unit is now complete and ready for use.

1. Place a fibre or copper gasket

against the unit fitting.

2. Screw the "new" adapter up tightly against the gasket.

3. Engage the screw driver wrench with the slot in the purge screw head.

4. Using a copper gasket, screw on the hermetic valve body to the adapter, engaging the screw driver

R. Robinson, Brooklyn 7, N. Y.

Fused Control Points

In some installations i. which there is a slight low voltage condition, points on controls on commercial systems may fuse together recurrently, necessitating repeated callbacks and adjustments. You can get around this problem by replacing with a mercury

W HEN preparing wire cable for control or motor connection, first cut the outer rubber covering around the cord at proper length. Remove the rubber with pliers starting next to the cut and working to-ward the end. The stubborn cotton braid is next removed easily by burning on one edge with a small flame torch or alcohol flame. The charred edge of braid can be easily scraped off loosening all the braid. Edison Knauss, Minneapolis

Air in the System

Air in the refrigeration system may cause a unit to operate but not refrigerate because:

1. The air condenses instead of the refrigerant gas.

2. The air does not condense but fills up the condenser, preventing the gas in the unit from condensing.

3. It dilutes the refrigerant gas.

Give Them Air

On any air-cooled condensing unit, remember that air circulation is of primary importance. Always be on the lookout for proper fan rotation. A cabinet should always be free-standing, so that no walls or other fixtures impede air circulation. Watch for accumulations of paper or trash which tend to gather behind cabinets and prevent proper air movement.

Check motors for proper rotation after they are returned from repair shops. Improper rotation invariably ruins shaft seals. Wrong rotation also can account for high head pressures,

INDEX OF ADVERTISERS

THE REFRIGERATION INDUSTRY NOVEMBER, 1946

| NOVEMBER, 1946 | |
|--|---|
| Advanced Aircraft, Inc | |
| Alco Valve Co | |
| American Brass Co | 4 |
| Ansul Chemical Co | |
| Brunner Mfg. Co | |
| Century Electric Co | |
| Davison Chemical Corp. 52 Dayton Rubber Mfg. Co. 16 Detroit Lubricator Co. 18 | |
| Electrimatic Div | |
| Grand Rapids Brass Co | |
| Henry Valve Co | |
| Imperial Brass Mfg. Co | |
| Kerotest Mfg. Co | |
| Larkin Coils, Inc. 50 Lynch Mfg. Co. 1 | |
| McIntire Connector Co. 55 Marlo Coil Co. 44 Mills Industries, Inc. 35 Mueller Brass Co. 10, 30 | |
| Nash-Kelvinator Corp. 59 National Lock Co. 46 Northern Indiana Brass Co. 64 | |
| Paragon Electric Co | |
| Ranco, Inc | |
| Skasol Corp. 63 Stangard-Dickerson Corp. 58 Superior Valve & Fittings Co. 20 | |
| Temperature Control Devices | |
| U. S. Gauge— Div, American Machine & Metals, Inc 66 | |
| Virginia Smelting Co | |
| Wagner Electric Corp. 43 Weatherhead Co. Cover 2 Western Thermal Equipment Co. 53 | |
| White-Rodgers Electric Co | |

because a reversed fan blade does no work at all insofar as drawing in or blowing air is concerned.

Which Type Valve?

On a wrap-around farm milk cooler, which type expansion valve should be used—automatic or thermostatic? Why?

A. The use of a thermostatic expansion valve will permit faster and more efficient cooling and has advantages over the automatic type valve. Some manufacturers hesitate to use a thermostatic expansion valve because if the water is changed in the cooler a tremendous refrigeration load is imposed on the condensing unit because the thermostatic valve calls for a large amount of refrigeration due to the comparatively warm water. There have been cases of overloading motors under these circumstances and this may result in a burntout motor. The automatic valve under these circumstances will not open up and impose an excessive load on the condensing unit. There are, however, thermostatic valves of a minimum back pressure type designed for milk cooling installations.

FREQUENTLY a reducing fitting is not available.

Many times I have gotten myself out of a spot by tapping the hole in HALF UNION FLARE NUT



%" flare nut-Tap 1/2 pipe.

" flare nut—Tap ¼ pipe.
" flare nut—Tap ¾ pipe.

a flare nut with a pipe tap and screwing in a half union of the proper size.

The thread in the flare nut will not have a full thread but it will hold any ordinary pressure particularly if the joint is soldered.

Edward A. Wenk, New York City

Timing Clock

A specially developed timing clock recently put on the market performs such versatile jobs as defrosting the refrigerator, turning household lights off and on, timing roaster operations, awakening sleepers to the strains of radio music, tuning in selected programs at any hour, and controlling various other household appliances.



Your service work is easier.

pecause prefrigeration valves are dependable

The extreme simplicity of construction that makes the precision-built

A-P Thermostatic Expansion Valve so DEPENDABLE in long-life service is an additional advantage to the service engineer.

Every part of this important A-P needle assembly has been tested and inspected many times for its vital task of accurate refrigerant control. The Stellite needle, for instance, is made from special stock which must be subjected to chemical analysis and laboratory furnace to be absolutely sure every bar of stock has the correct percentage of every required element before machining and production. The finished assembly is checked under instruments working to millionths of an inch accuracies, before its many operating tests.

imple construction, easy installation and inspection, DEPENDABLE supersensitive rigerant control—are proven superiorities that keep A-P Refrigeration Valves palar with engineers and owners alike.

AU OMATIC PRODUCTS COMPANY

IN THIRTY-SECOND STREET - MILWAUKEE 10, WISCONSIN

Dependable

REFRIGERANT VALVES

NDED AND INSTALLED BY LEADING REFRIGERATION SERVICE ENGINEERS



ALL over America, retailers are continuing to devote their time and special talents to the important job of promoting, selling and buying U.S. Savings Bonds. They know that every minute of radio time and every line of advertising space devoted to bonds is a safeguard for stability. They know, too, that every window or store display is an attention-attracting stimulus toward greater "take home savings" in bonds—money that is kept within the community to help assure its future prosperity and purchasing power.

In small-village stores and in big-city department stores, there's still a big selling job to be done on U.S. Savings Bonds—and retailers are doing it now with the same vigor and skillful support that set billion-dollar

records in War Bond Sales and helped to make Victory a reality. See your selling job through on U. S. Savings Bonds...maintain your share in America's future!

The Treasury Department has published two new booklets to help you and your employees realize full benefit from your

Payroll Savings Plan. "Peacetime Payroll Savings Plan" is directed to key executives and contains helpful suggestions on how to organize and promote the sale of U. S. Savings Bonds. "This Time It's For You," for distribution to your employees, shows how the Plan works, how to select desired goals, and how much to set aside to achieve them.

The Treasury Department acknowledges with appreciation the publication of this message by

The Refrigeration Industry

